

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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Reading Matter Contents.....	page 46
Alphabetical Index to Advertisers ..	137
Classified List of Advertisers.....	139
Advertising and Subscription Rates ..	53



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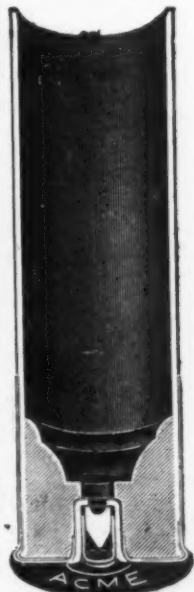
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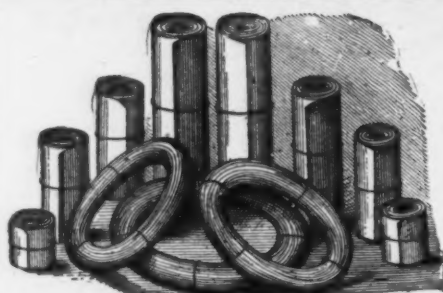
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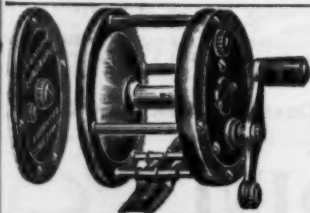
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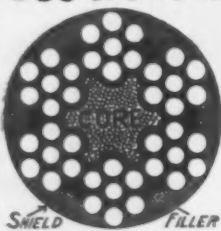
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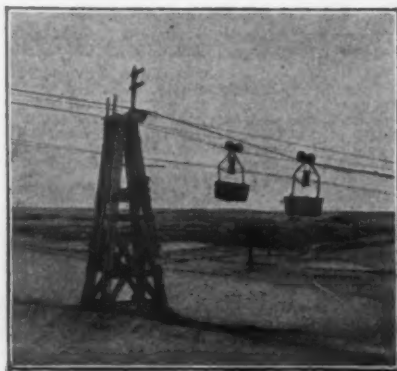
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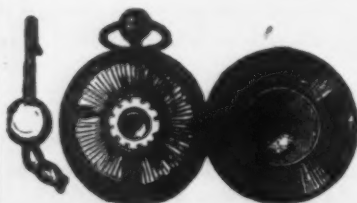
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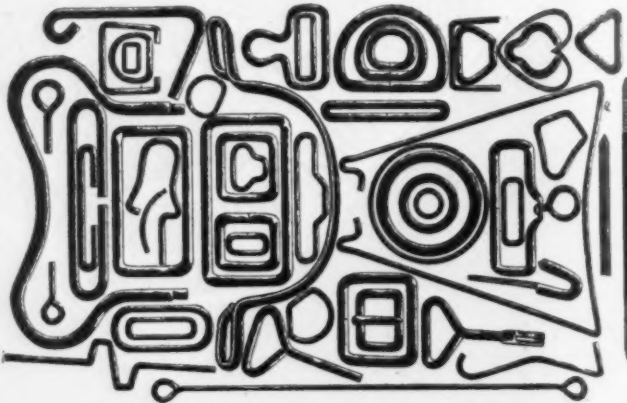
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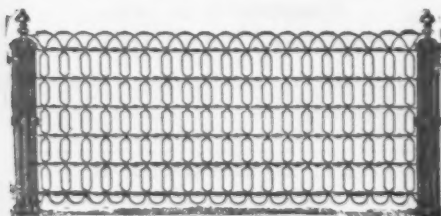
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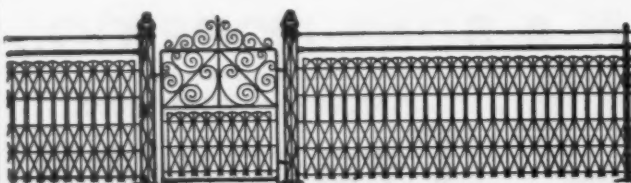
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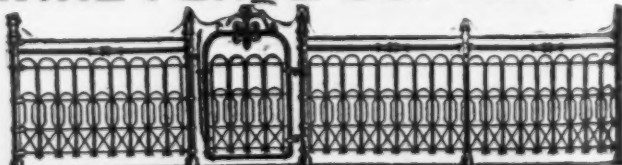
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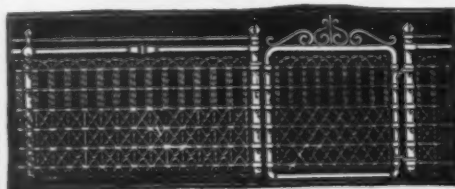
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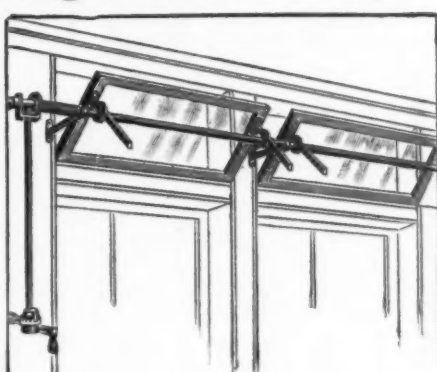
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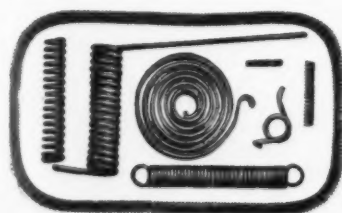
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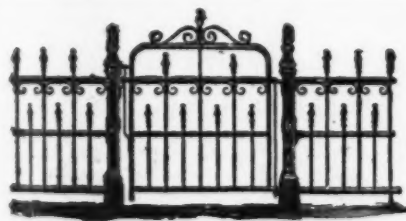
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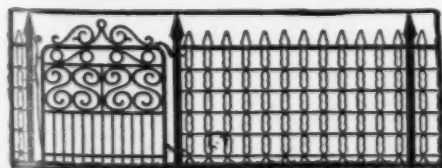
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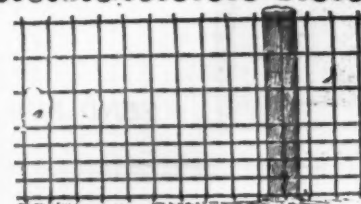
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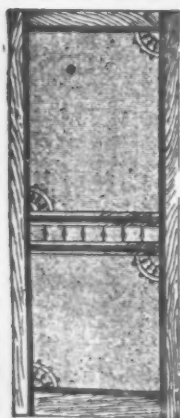
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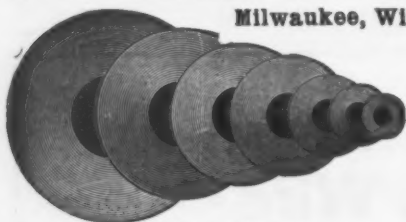
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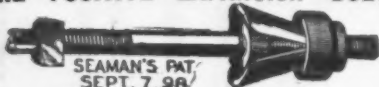
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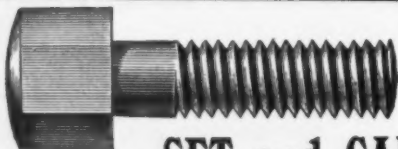
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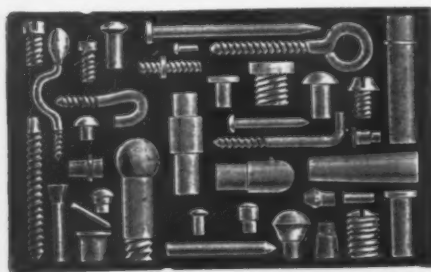
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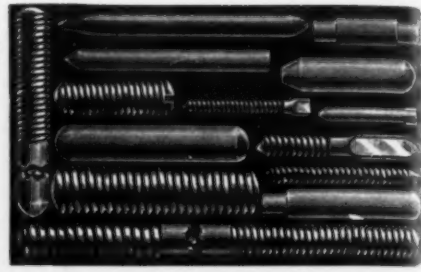
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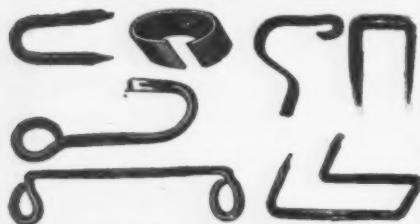
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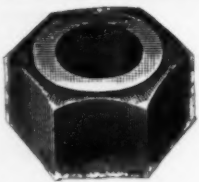
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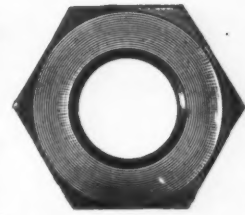
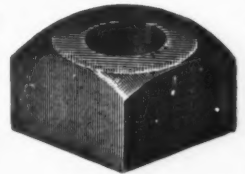
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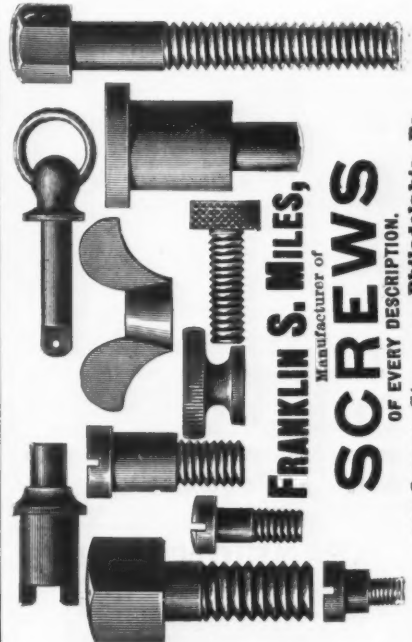


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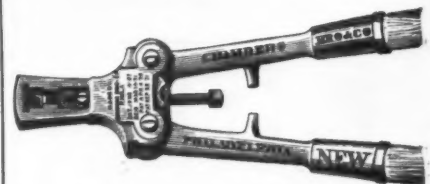
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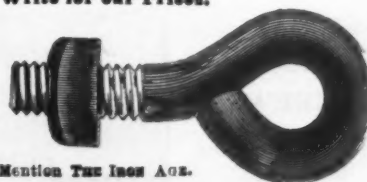
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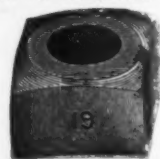
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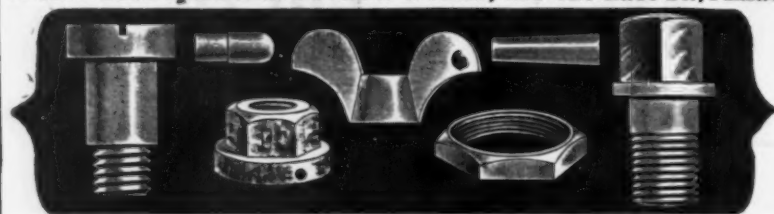
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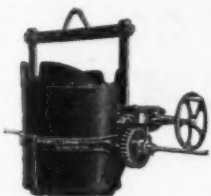
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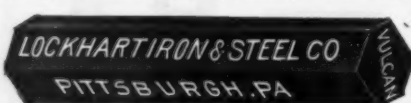
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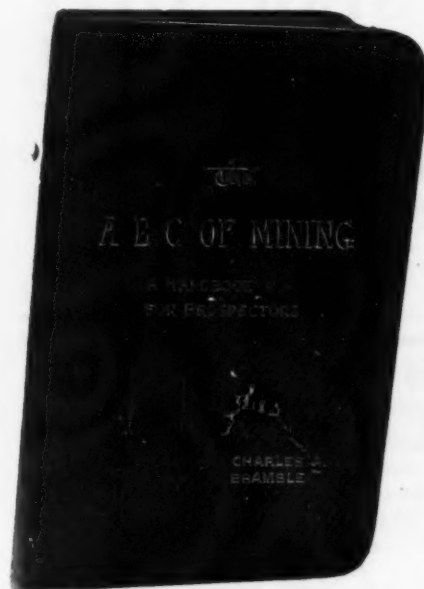
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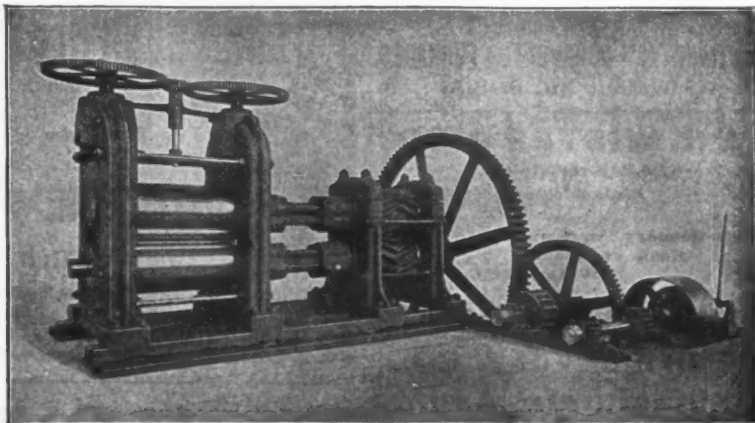
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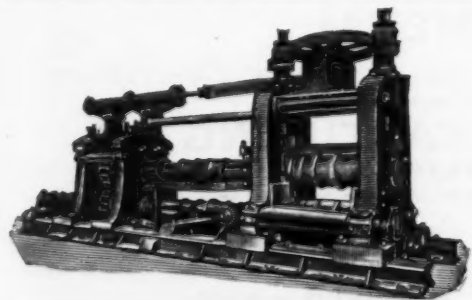
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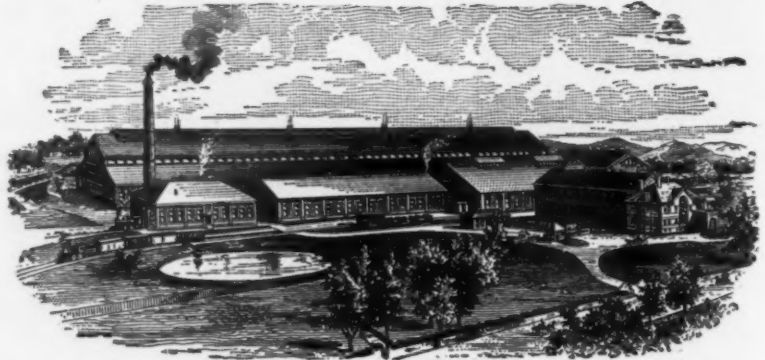
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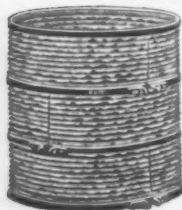
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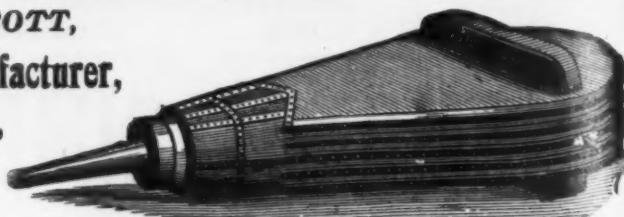
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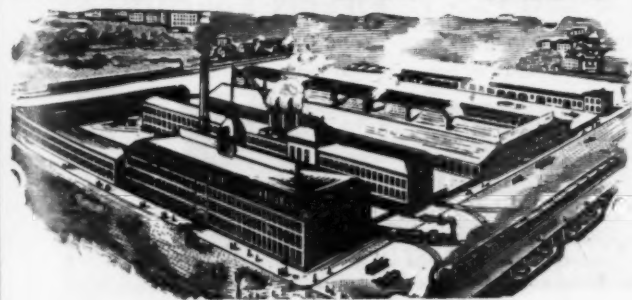
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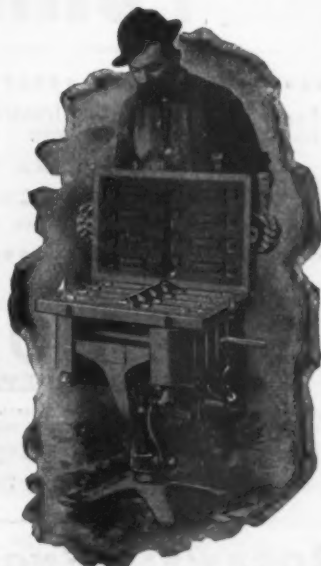
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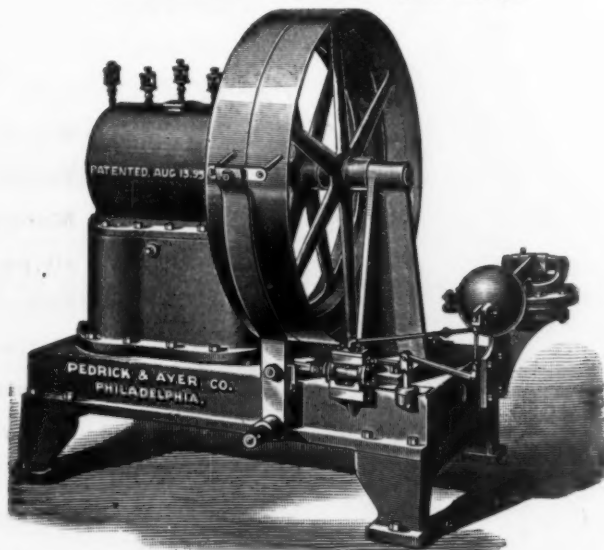
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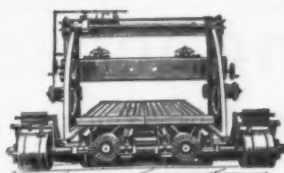
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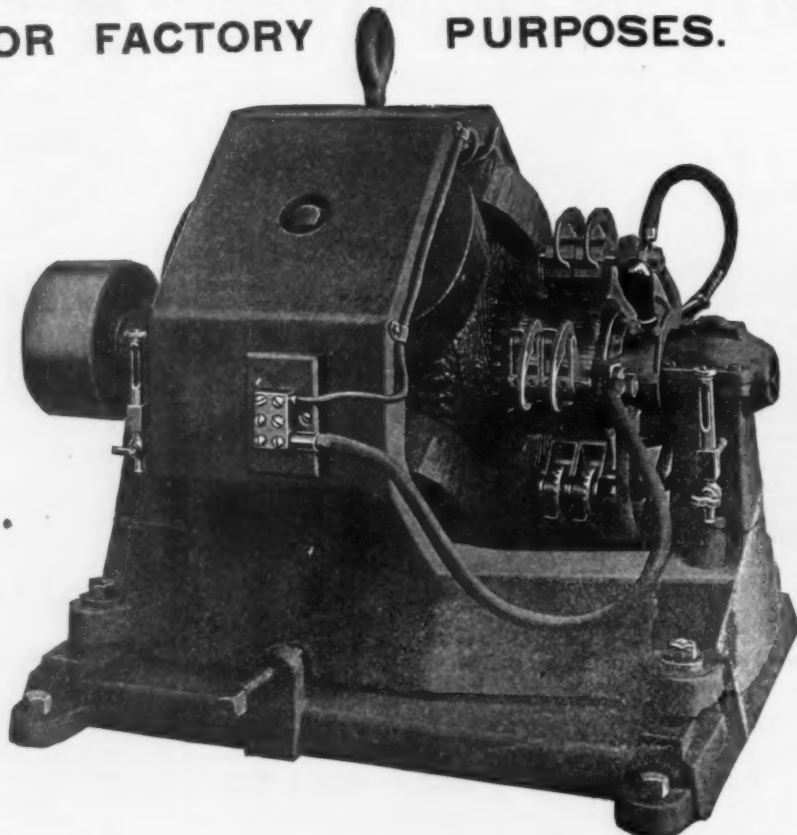




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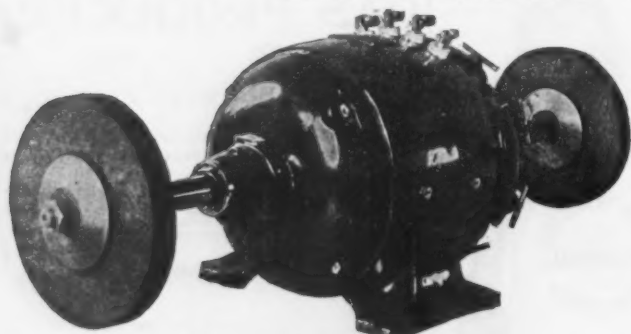
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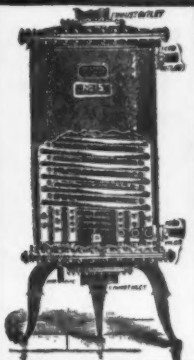
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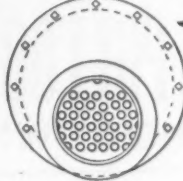
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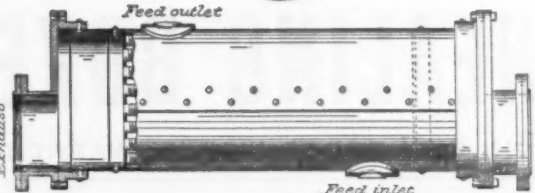
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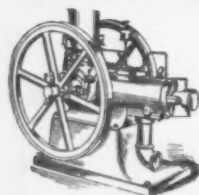
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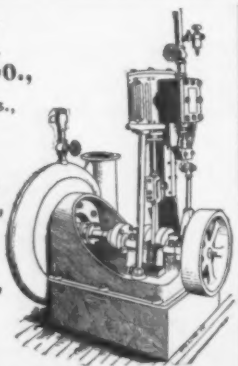
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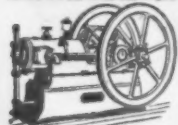
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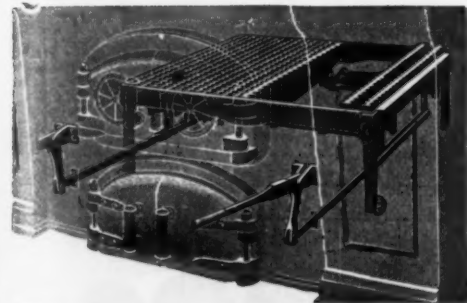
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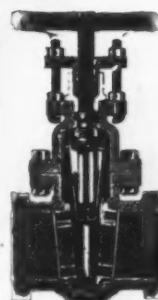
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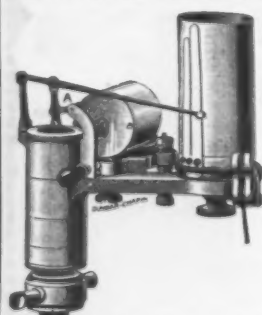


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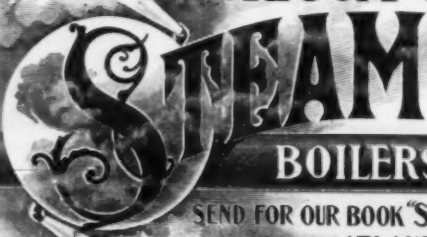
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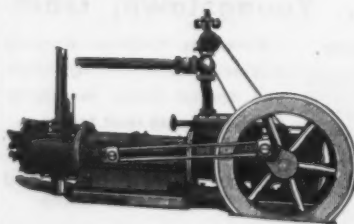
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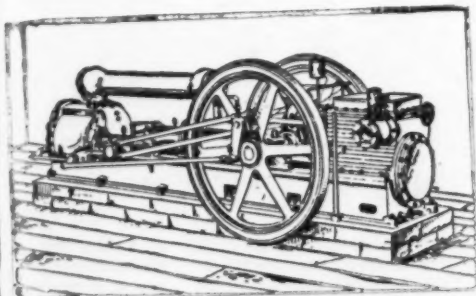
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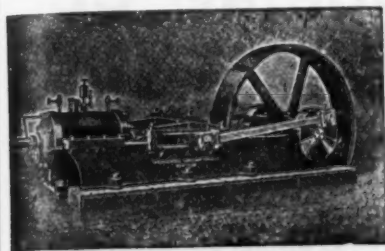
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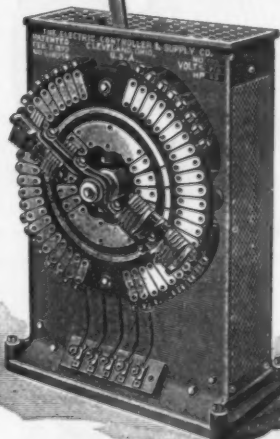
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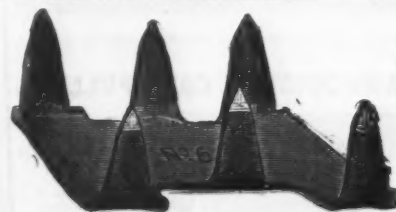
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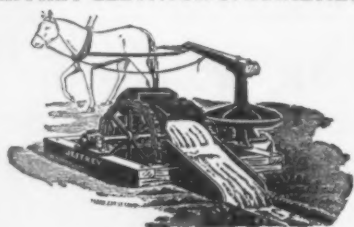
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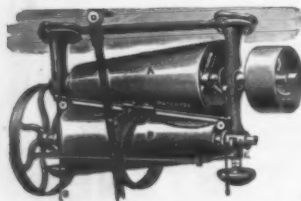
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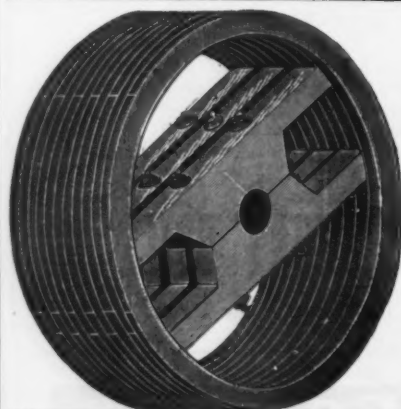
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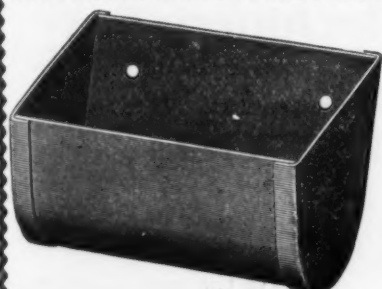
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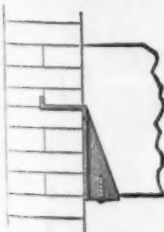
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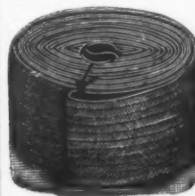
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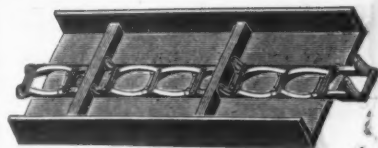
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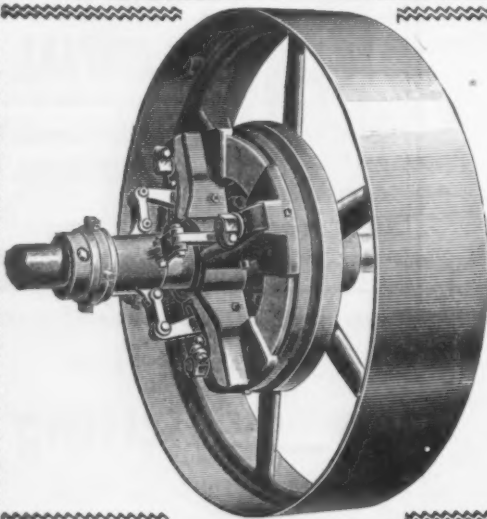
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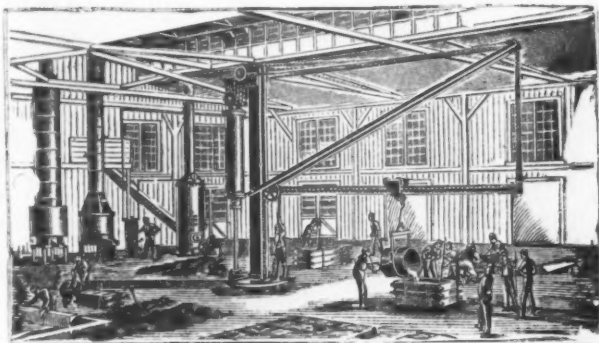
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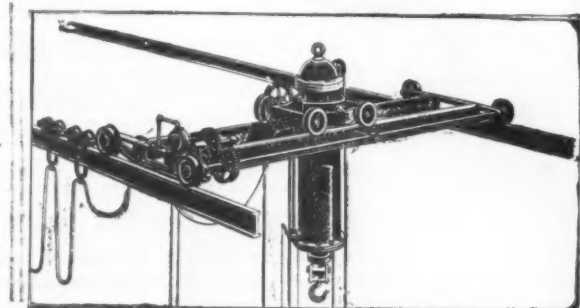
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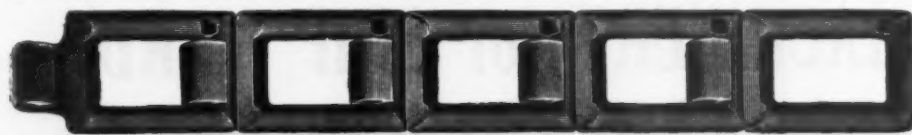


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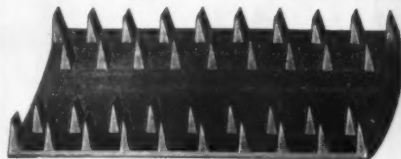
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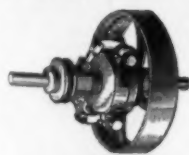
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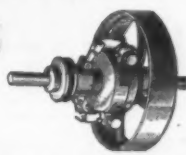
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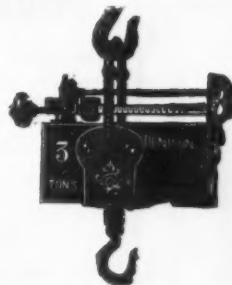
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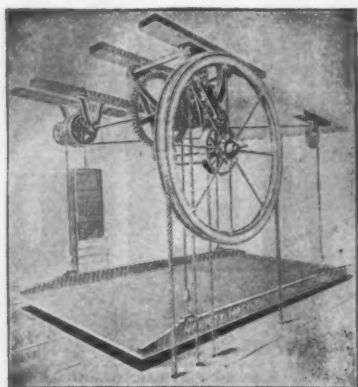
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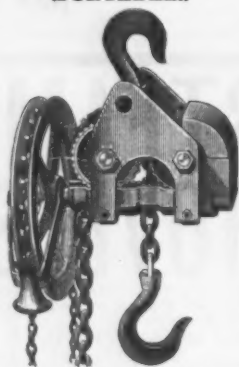
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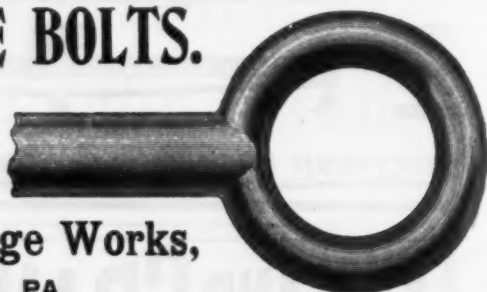
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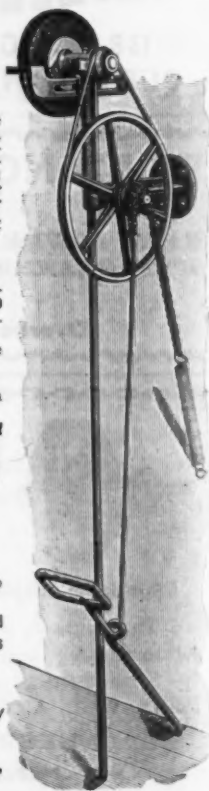
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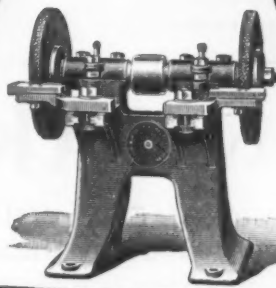
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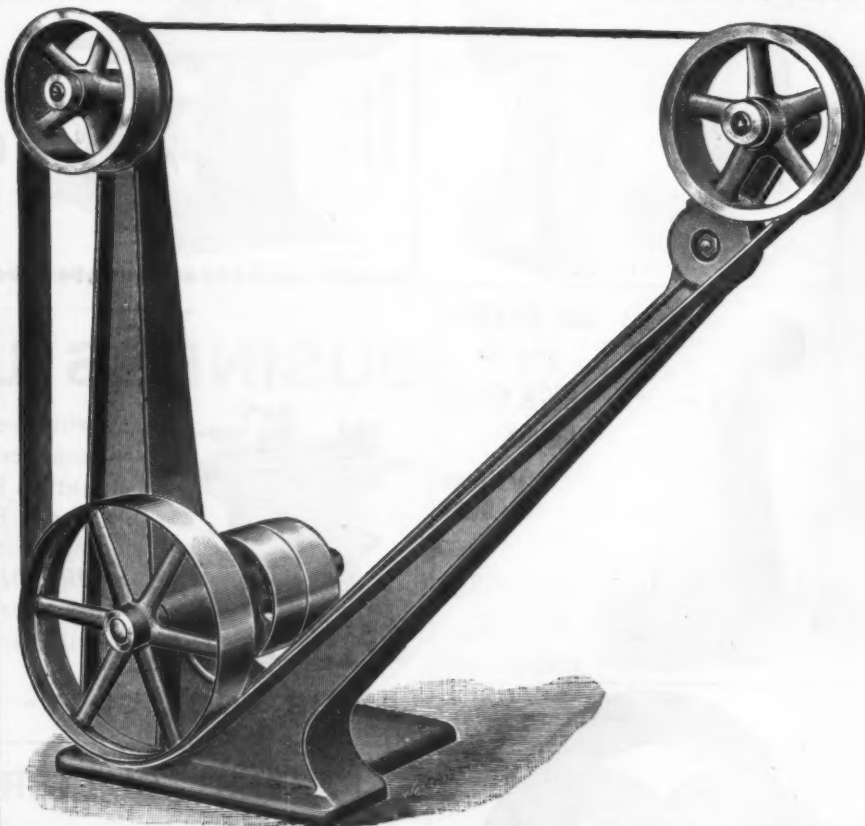
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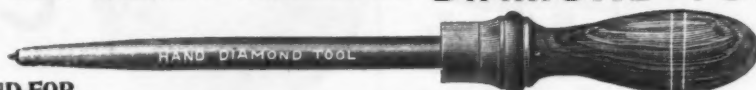
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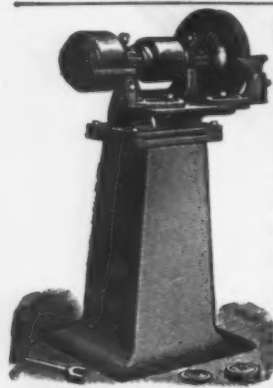
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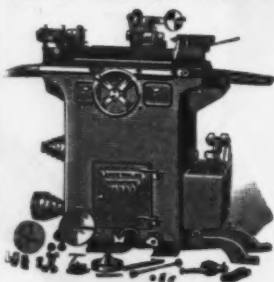


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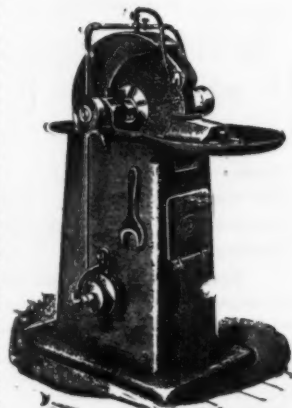


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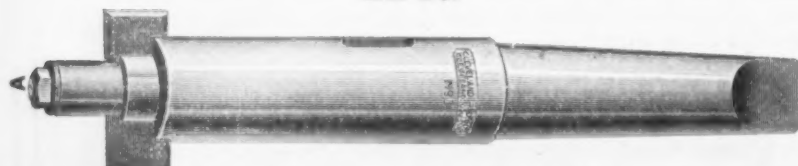
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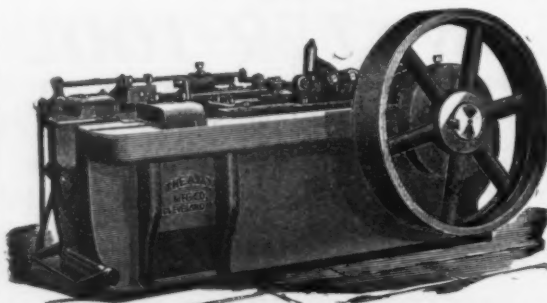
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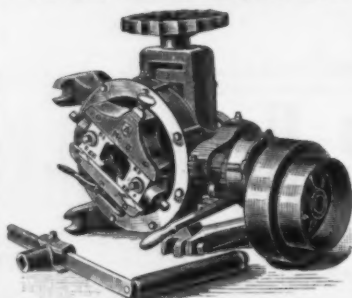


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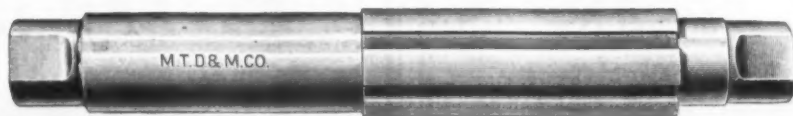
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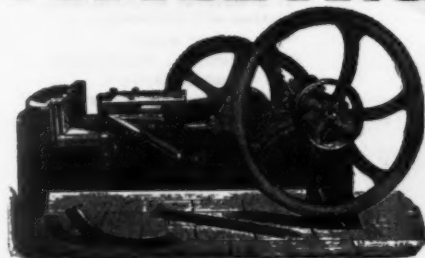
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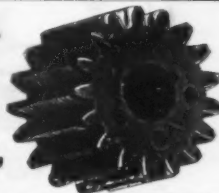
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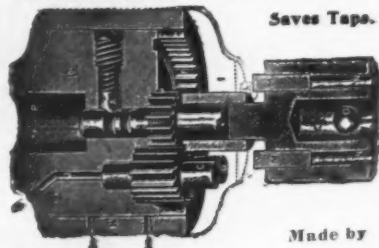
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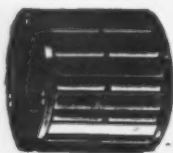
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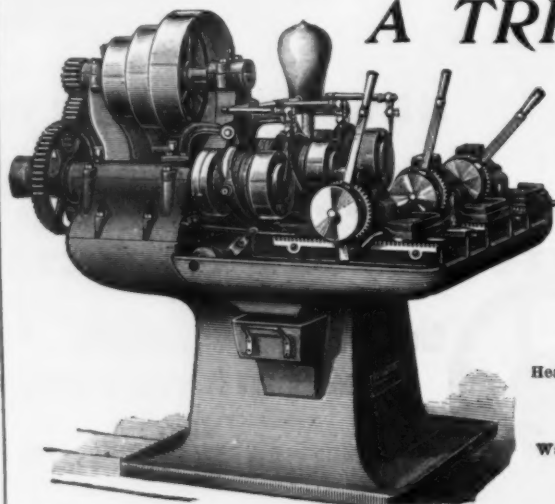


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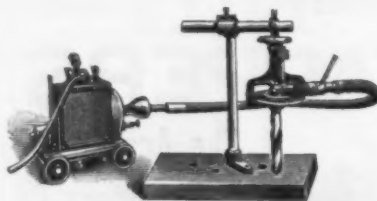
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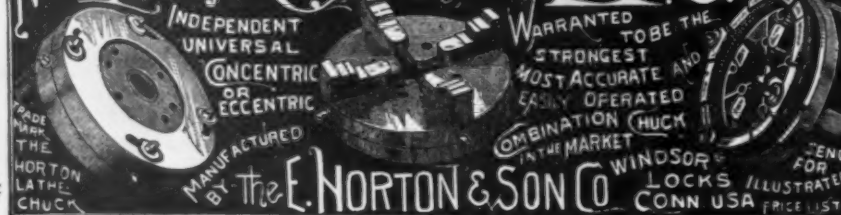
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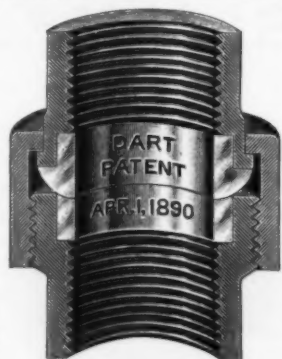


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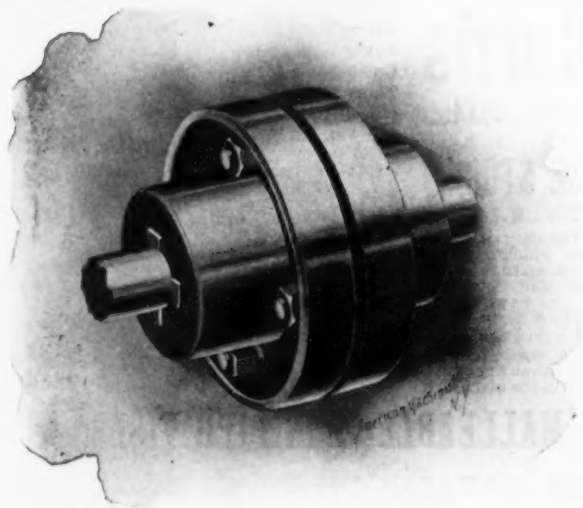
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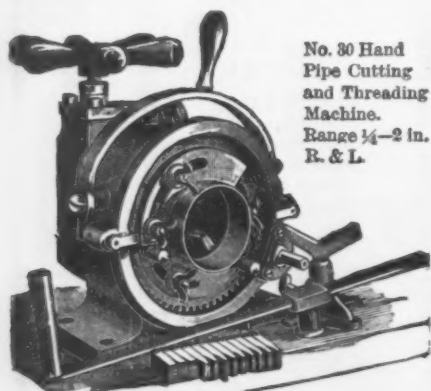
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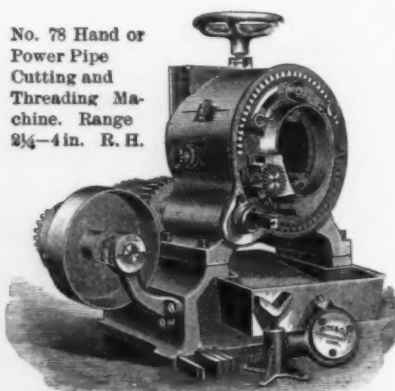
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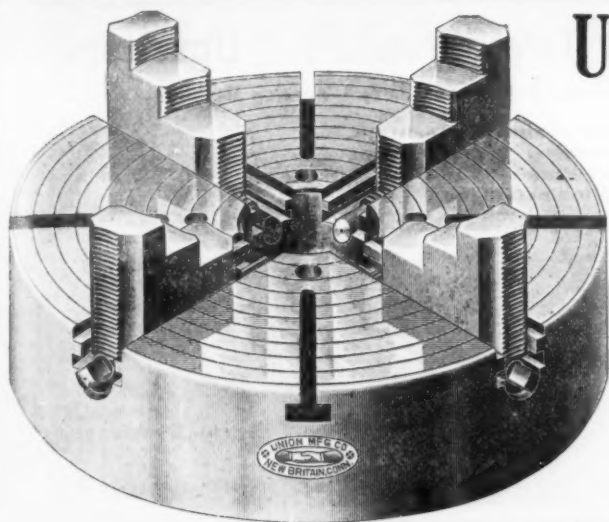
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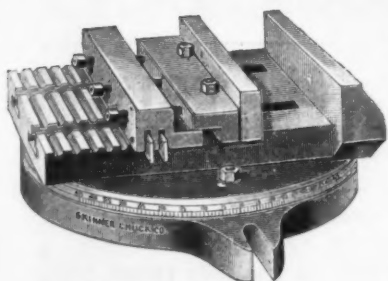
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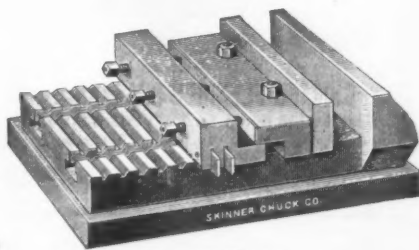


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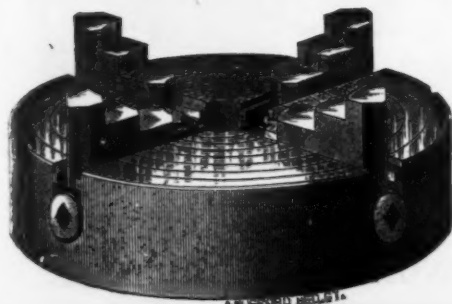
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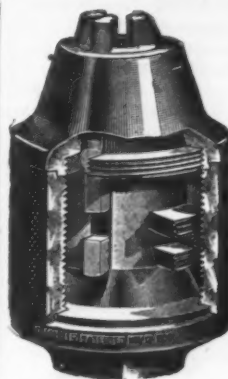
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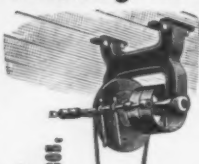
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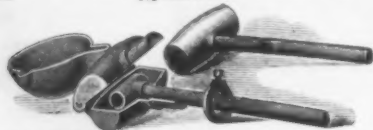
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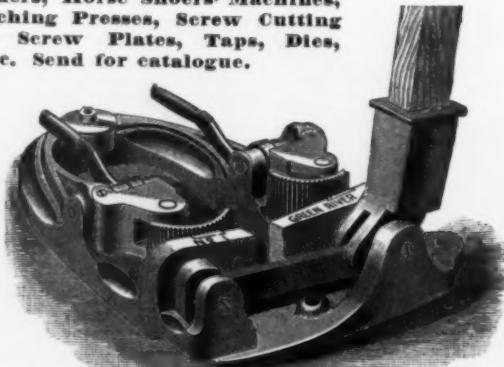


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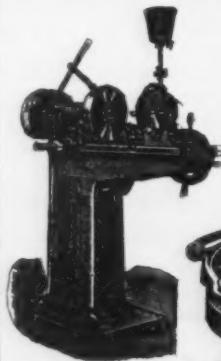


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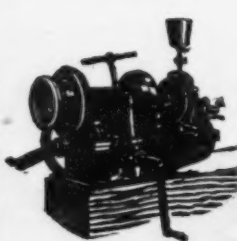
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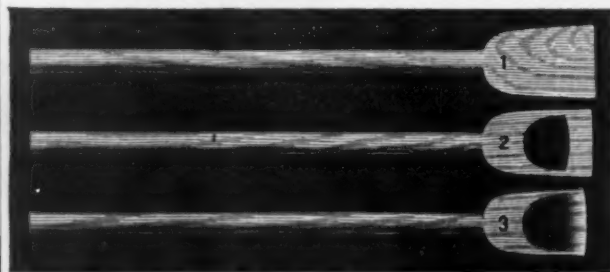
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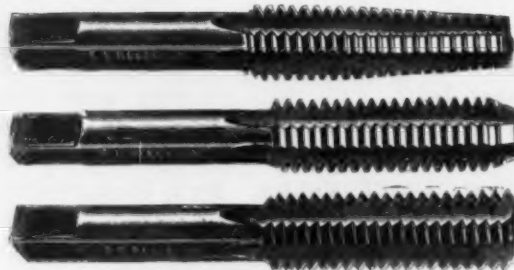
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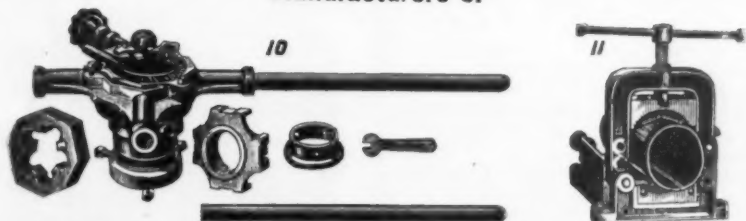
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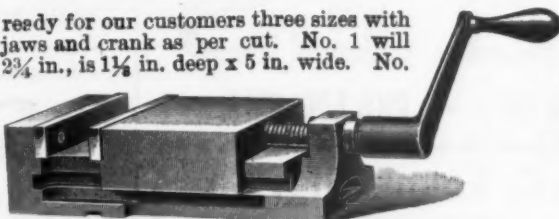
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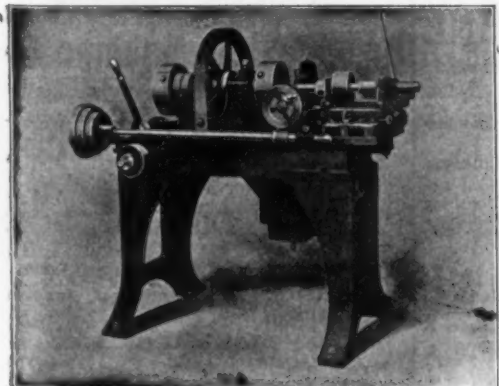
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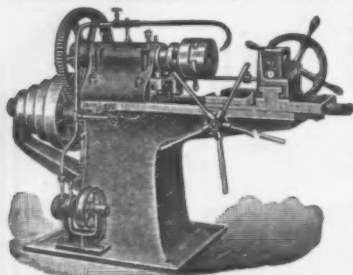
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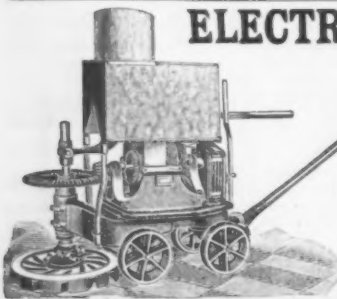
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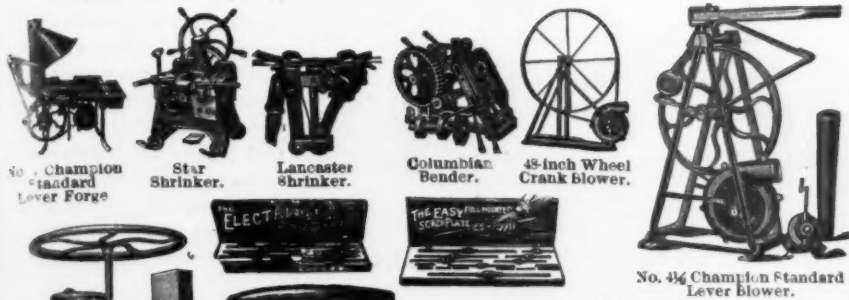
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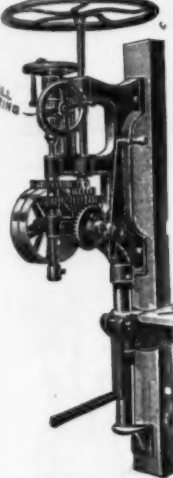
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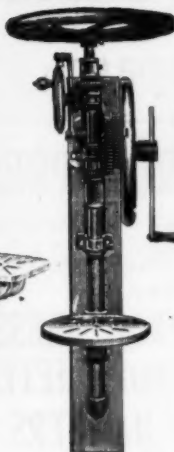
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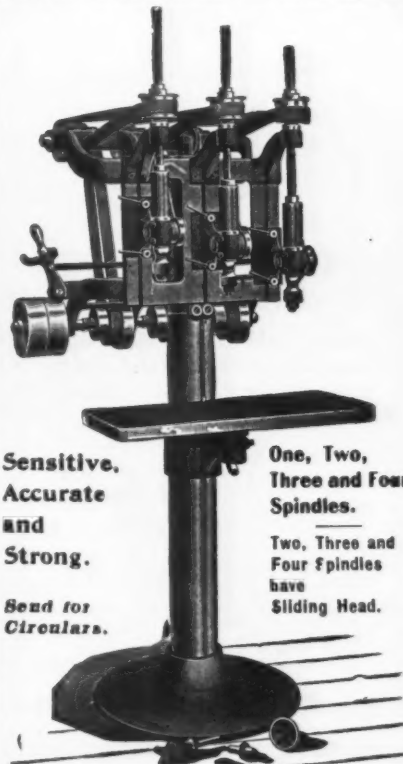


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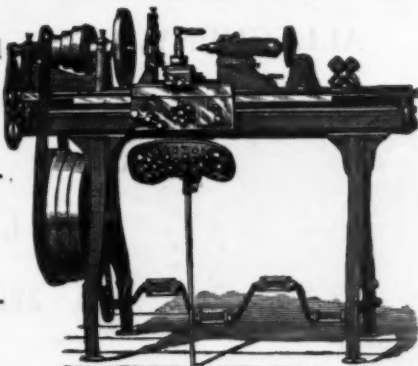
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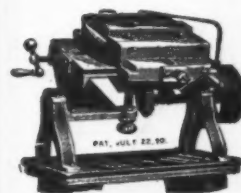
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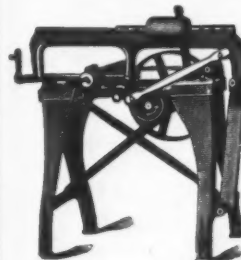
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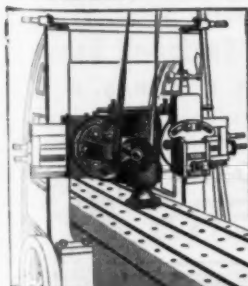
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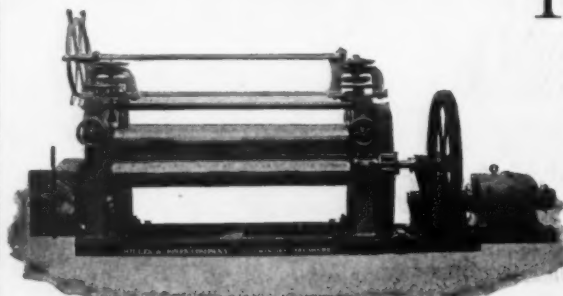
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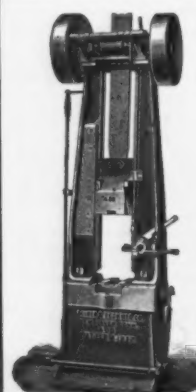
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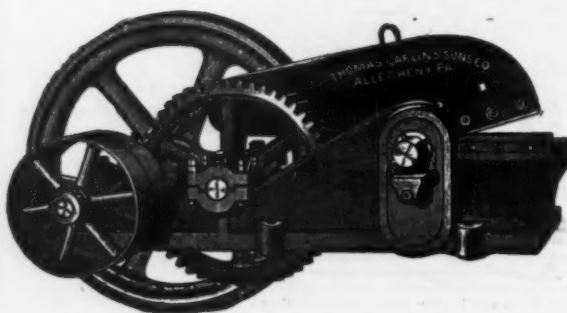


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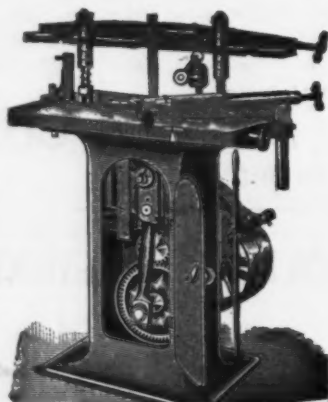
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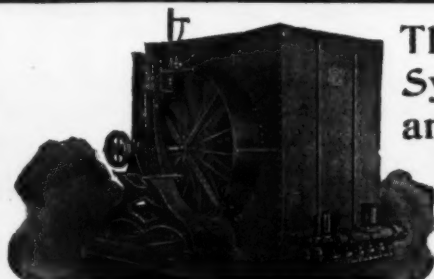
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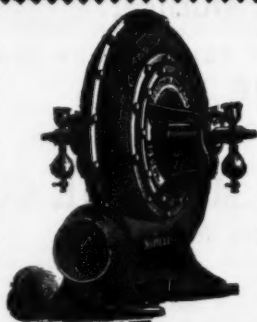
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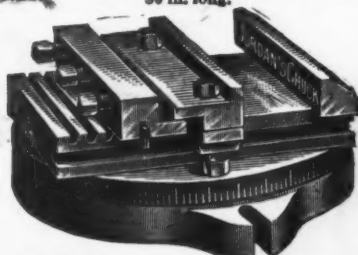
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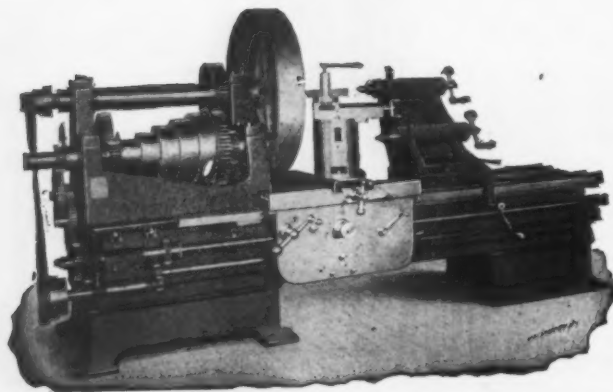
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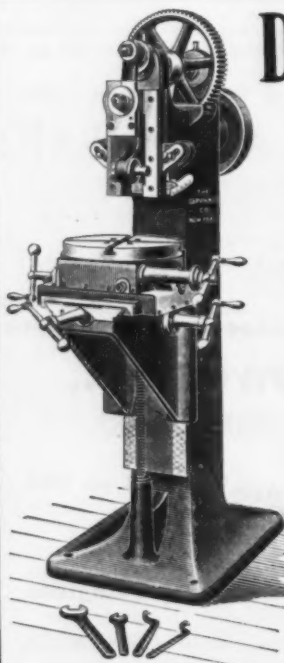
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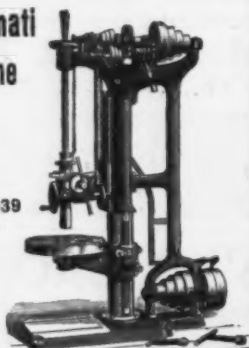
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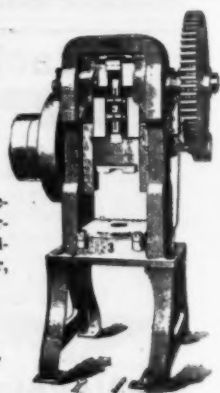
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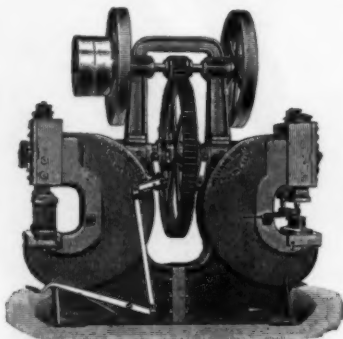
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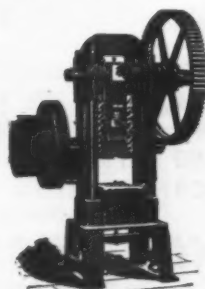
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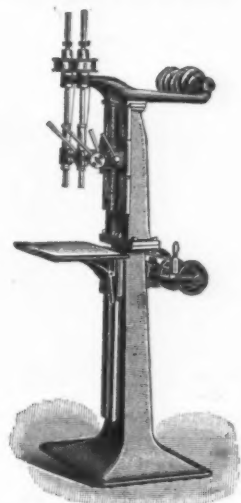
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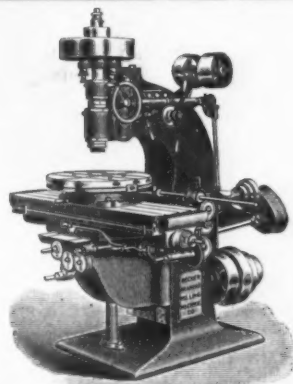
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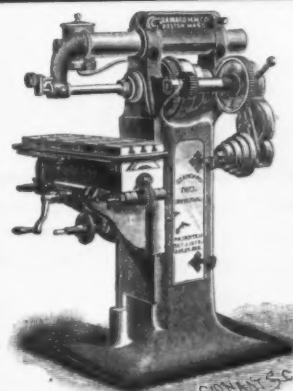


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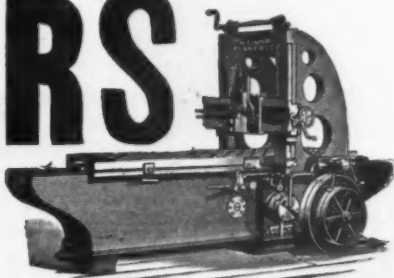
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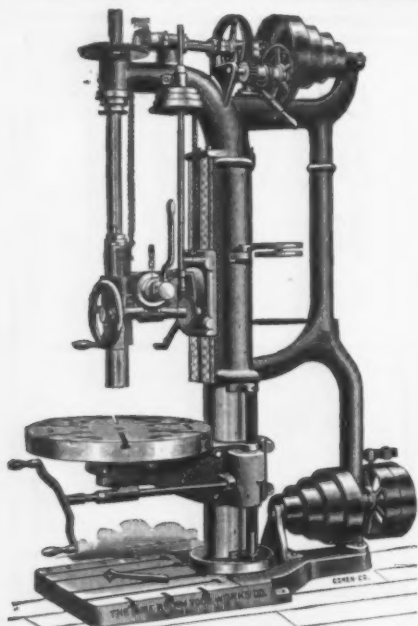
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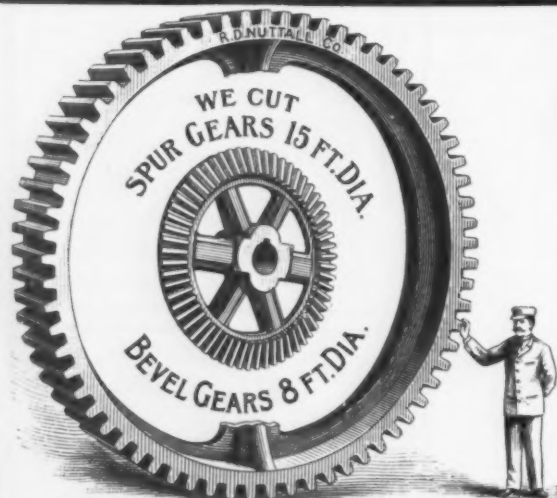
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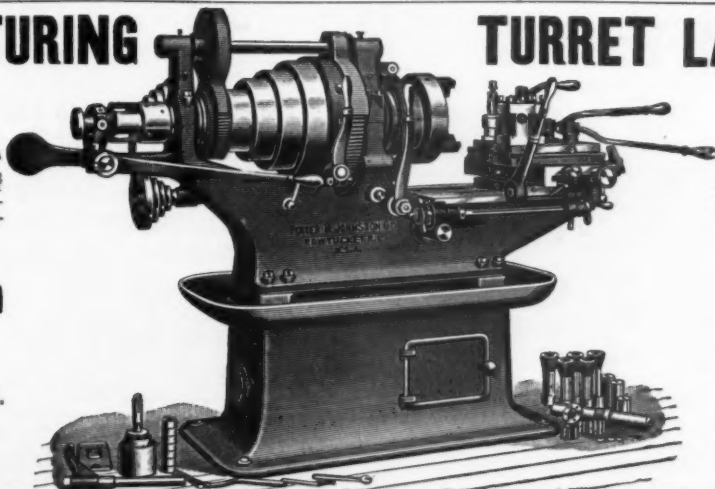
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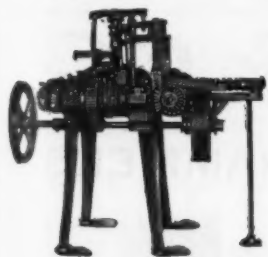
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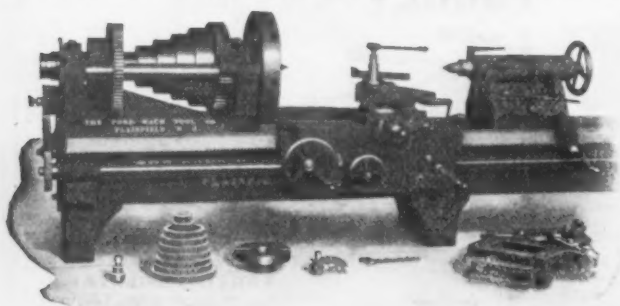
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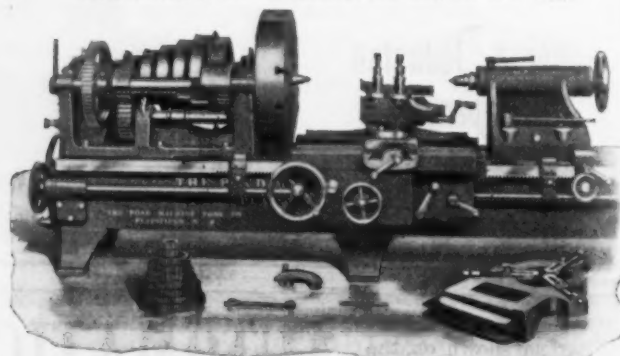
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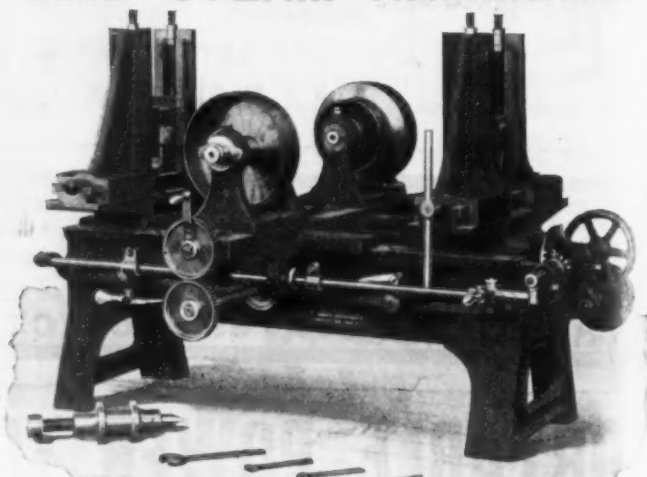
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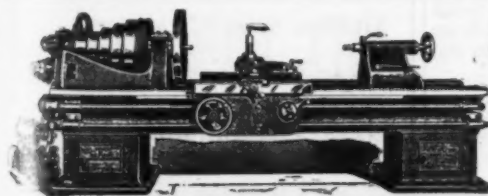
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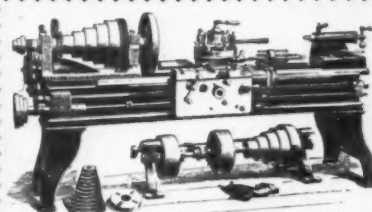
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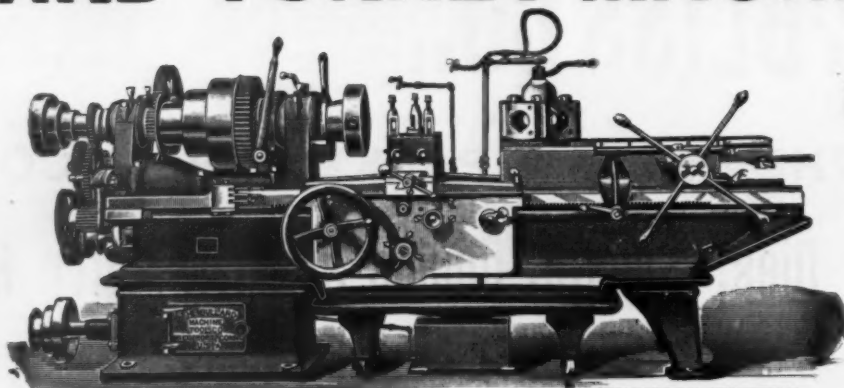
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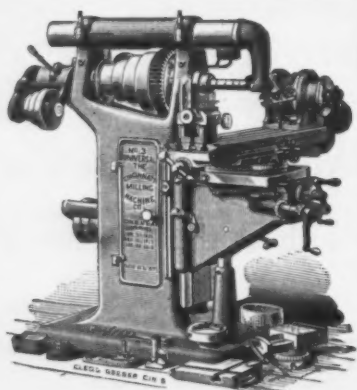
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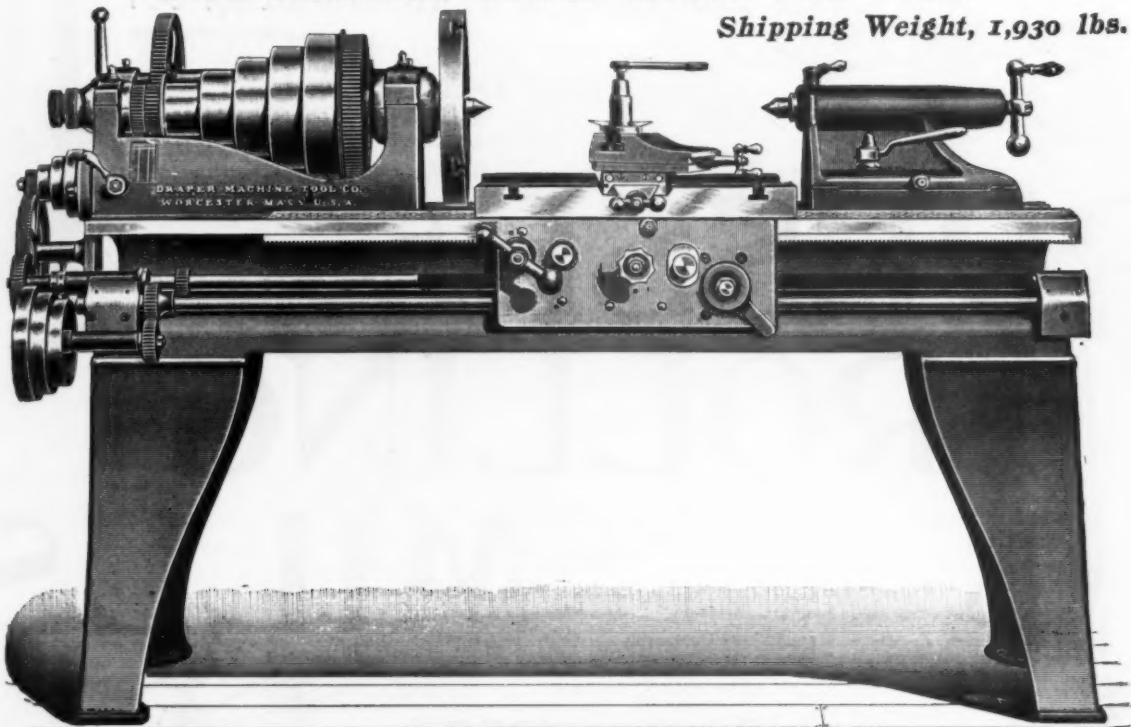
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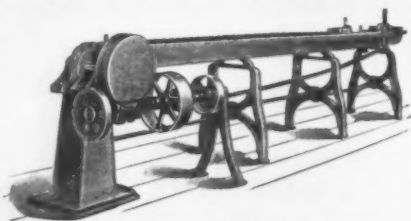
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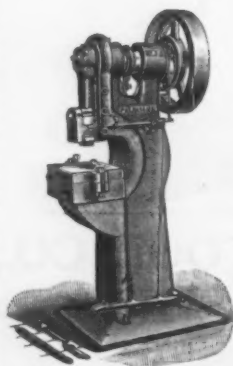
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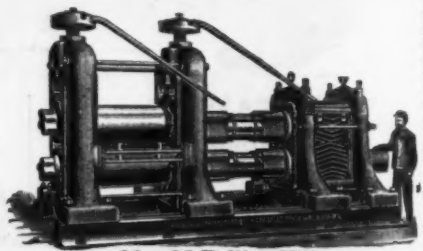
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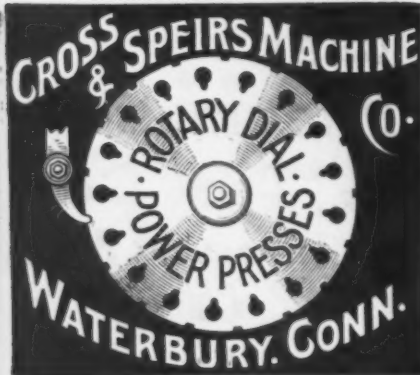
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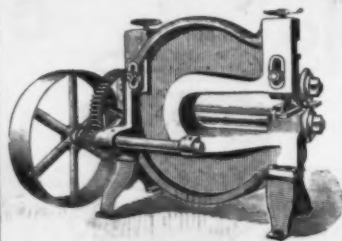
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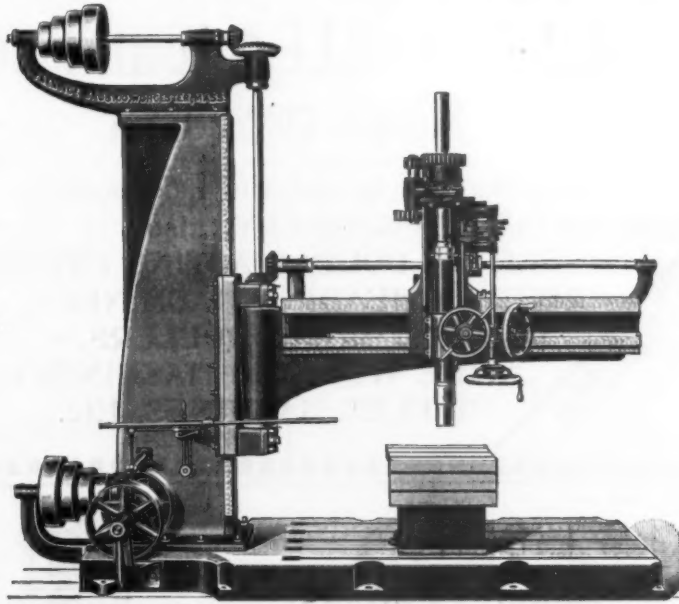
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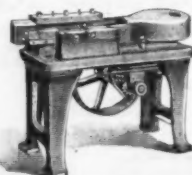




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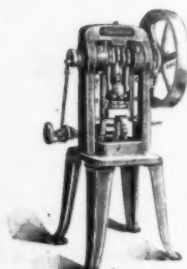


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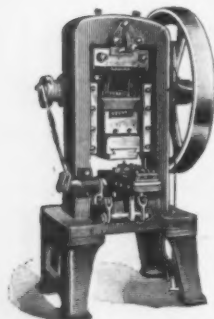
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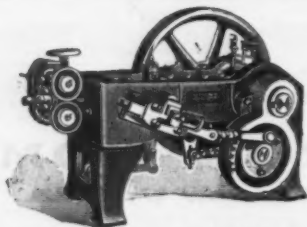
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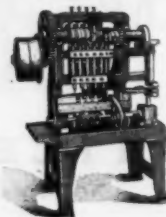
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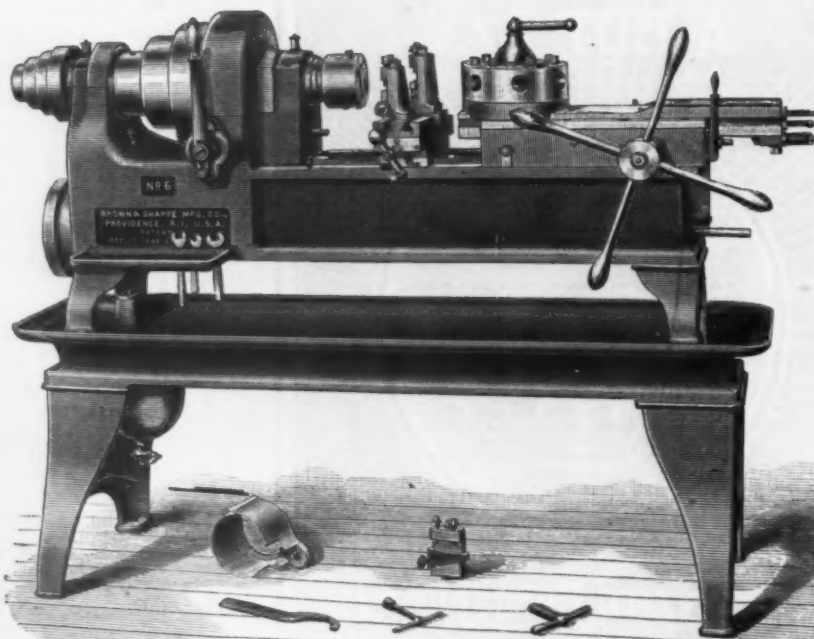
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1 7 in. x 9 in. N. Y. Safety Vertical Engine.  
1 6 in. x 8 in. Vertical Engine.  
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1 10 H. P. Climax Engine.  
1 6 x 10 H. P. Baxter Engine and Boiler.  
1 30 in. x 10 ft. Place Lathe, 1 16 in. x 6 ft. Porter Lathe.  
1 16 in. x 7 ft. Engine Lathe.  
30 in. Drill Presses 7 ft. x 30 in. Band Wheel.  
8 ft. x 16 in. Band Wheel.  
Vertical Boilers 8 to 50 H. P., second-hand.  
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Large stock of New Engines, Boilers, Machine Tools, etc. LOVEGROVE & CO., 145 N. 3d St., Phila.

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USED ONLY THREE MONTHS.

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1 Woodward & Rogers 2 Spindle Drill.  
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1 52 in. x 60 in. x 22 ft. Planer.  
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1 17 in. x 7 ft. Blaisdell Lathe.  
1 22 in. x 15 ft. Pond Lathe.  
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1 Combined Punch and Shear, cuts and punches 1/4 in.  
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36 in. x 72 in. Providence Corliss Rolling Mill Engine, wheel 26 ft. in dia., about 50 tons; engine left hand.  
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1 22 in. x 9 ft. " "

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High grade and maximum efficiency.  
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PENNSYLVANIA MACHINERY CO.,  
The Bourse, Philadelphia

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1 15 in. x 12 in. x 36 in. Planer.  
1 16 in. x 24 in. Crank Planer.  
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Eight 44 x 16 Tubular Boilers, 33 4 in. flues, all fixtures and trimmings.

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 1 18 x 6 Fuller.  
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 16 in. " " Gould & Eber.  
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### FIFTEEN THOUSAND ACRES OF coal in Centre and Clinton Counties, Pa. on the Beech Creek Railroad, suitable for shipment East.

### TEN THOUSAND ACRES OF COAL on the main line of the Pennsylvania Railroad, containing four veins of coal, mostly above water. John Fulton, Mining Engineer of Johnstown, Pa., estimates over 80,000,000 acres of coal on this property. Will be sold cheap to a prompt buyer.

### GLASS SAND PROPERTY, NEAR Birmingham, Ala. 920 acres of property containing most excellent glass sand, on four trunk lines of railroad, near Birmingham, Ala. Will be sold for a reasonable price.

For full information address

J. H. HILLMAN & SON,

Empire Building,

PITTSBURG, PA.

## For Sale.

Pair 14 x 36 Harris-Corliss; 24 x 56 Watts-Campbell; 13 x 12 and 2 11 x 12 New York Safety. 100 K W M P. 3-800, 300, 300, 30, 30 Light dynamos. 2 30 H. P. crane motors, speed 300. 1 H. P. 220 volt motor, slow speed. 4 Sturtevant exhausters, 3 Buffalo blowers. Steam shovels, hoisting engines, crushers, coal mining machinery and contractors' equipment. SEND DESCRIPTION any machinery wanted or for sale.

CHESLEY MACHINERY CO., Havemeyer Bldg., N. Y.

## FOR SALE.

Elevator Stop and Lock Patent.

Elevator Gate and Bar Patent.

Send for our list of patents.

P. O. BOX 2264, Boston, Mass.

# AUTOMATICS.

Five 2½ in. Cleveland Automatic Screw Machines, used less than twelve months. In first-class condition.

## GEAR CUTTER.

50 in. Gould & Eberhardt Full Automatic, cuts spurs, bevels and worms, complete with pump, pan and usual features.

## MILLING MACHINE.

No. 3 Cincinnati Universal, Automatic feeds in all directions.

42 in. Bullard Turret Boring Mill, Screw Cutting.

## Marshall & Huschart Machinery Co.,

62-64 S. Canal St., Chicago, Ill.

19 S. Water St., Cleveland, O.

510 Johnson Bldg., Cincinnati, O.

## PARTIAL LIST OF Second-hand Machinery IN STOCK.

1 90 H. P. 60 in. x 16 ft. Tubular Boiler.  
2 125 H. P. 66 x 18 Tubular Boilers.  
1 100 H. P. Locomotive Boiler.  
1 100 H. P. Baker Automatic 14 x 20.  
1 100 H. P. Atlas Automatic Engine.  
1 150 Buckeye Automatic Engine, size 16x18.  
1 125 Buckeye Automatic Engine, size 14x16.  
1 100 H. P. Ball Automatic Engine, size 13x12.  
1 No. 12 Morris Centrifugal Sand Pump, direct connected to 12 in. vertical engine.  
2 No. 6 Morris Centrifugal Sand Pumps.  
1 16x10½x10 Worthington Duplex Pump.  
1 12x12x10 Worthington Duplex Pump.  
1 7x4½x10 Worthington Duplex Pump.  
1 Deane Duplex Power Pump, 5 in. plungers.

## RAINIER & WILLIAMS,

64 So. Canal Street, Chicago, Ill.

## Corliss Engines For Sale.

2 34 x 60 Horizontal Engines, one right hand and one left hand. These engines are now coupled to one shaft, but would furnish with fly wheel or band wheel to suit each separately.  
1 24 x 56 Horizontal Engine with 30 ft. band wheel.

## W. J. CARLIN COMPANY,

610-611 Lewis Bldg., Pittsburg, Pa.

NEW YORK OFFICE: 514-515 Park Row Bldg., New York, N. Y.

## 2d-Hand Machinery Bargains.

One 18 in. x 42 in. Watts Campbell and 22 in. x 42 in. Wright Corliss Engines. High Speed Automatic Simple, Compound, Condensing and Slide Valve Engines; also Blowing Engines, Boilers, Heaters, Pumps, Vacuum Pans, Ice Machines, Electric Motors, Generators, Railway Supplies, Metal Working and General Machinery.

CHAS. BRHLKN,

72 Trinity Place, N. Y.

## FOR SALE.

2 Phoenix 12 x 12 engines.  
1 10 x 6 x 10 Worthington Pump.  
1 14 x 20 x 20 Chase Pump.  
1 No. 10 Sturtevant Blower.  
Small Electric Light Plant.

## WALSH'S SONS & CO.,

Newark, N. J.

## BLOOMING MILL FOR SALE.

One 32 in. Reversing Blooming Mill with pair of 28 x 48 in. engines; also live tables, table engines, hydraulic manipulator, etc., built by Macintosh, Hemphill & Co.

## W. J. CARLIN COMPANY,

610-611 Lewis Bldg.,

Pittsburg, Pa.  
NEW YORK OFFICE: 514-515 Park Row Bldg., New York, N. Y.

## WANTED.

Second-hand Alligator Shears, that will cut up to 24 inches square blades to be not less than 12 inches long; to be used for shearing scrap. Give full particulars, price, etc. FRANK LENAHEAN & SON, 26-61 Fulton St., Buffalo, N. Y.

# Machinery Bargains.

24 x 48 Hamilton Corliss Engine.  
24 x 24 ft. Shafting Lathe.  
16 x 42 Atlas Corliss Engine.  
14 x 90 Cummer 4-valve Automatic Engine.  
14 x 14 Sutton Marine Engine.  
Two 12 x 11 and one 9 x 9 Westinghouse Engine.  
11 x 11 Ide Vertical Engine.  
8 x 16 Rice Automatic Engine.  
600 H. P. Rowe Feed Water Heater.  
300 H. P. Berryman Heater.  
300 H. P. Reynolds Heater.  
300 H. P. Stillwell-Bierce Heater.  
70 H. P. Otis Steel Fire Box Boilers.  
75 feet Double Leather Belt, 22 in.  
90 H. P. Waste Heat, Vertical Boiler.  
The above are all in first-class condition and ready for shipment.

## A. L. DAWSON & CO.,

27-31 W. Washington St., Chicago, Ill.

## FOR SALE.

## Mill and Contractors' Machinery.

1 25 ton Morgan Square Shaft 50 ft. span traveling crane.  
2 Hydraulic Cranes.  
1 Roll Lathe.  
1 Hydraulic Press.

## Machine Tools For Sale.

1 12 in. Fitchburg Shaper, sliding head.  
1 9 in. Gould Shaper.

## Engines and Pumps For Sale.

1 80 x 36 in. Vertical Corliss Rolling Mill Engine with 30 ft fly-wheel.  
4 Second-hand Steam Pumps.  
1 Centrifugal Pump.  
1 Second-hand Hoisting Engine.  
A full line of New Engines, Hoisting Engines, Shears, Grinding Pans, Stone Crushers and Contractors' Machinery.

## THOMAS CARLIN'S SONS CO.,

386 River Avenue, Allegheny, Pa.

## CUPOLAS, CRANES, LADLES, BLOWERS,

and all other Foundry Equipment, new and second-hand. Send us list of your wants.

## THE J. D. SMITH FOUNDRY SUPPLY COMPANY, CINCINNATI, O.

## FOR SALE OR EXCHANGE.

No. 5 Bardsen & Oliver Screw Machine, good as new, \$600.00. Has all extra attachments and forming tool slide.  
16½ x 32 Atlas Corliss, box bed type; right hand, 10 years old, used very little and overhauled, \$800.00.  
32 x 16 Full Flush Front Boiler, 130 lbs. test, complete, \$250.00.  
1 2, 4, 7, 9, 12 H. P. Old Gas Engines. New, all sizes.  
2, 3, 8 H. P. Second-hand Rollers and Engines, cheap.  
Large Paper Cutter. Gauge Lathes, Motors, etc.  
MILWAUKEE MACHINERY CO.,  
121 W. Water St., Milwaukee, Wis.

## 2d-HAND FEED WATER HEATERS.

Largest stock in America. Will be sold at bargain. These heaters are mostly taken in exchange for our improved Berryman (Kelley's Patent), "A Little Giant," vastly superior to all other feed water heaters, both as to results and durability.

BENJ. F. KELLEY & SON, 91 Liberty St., N. Y.

## LIGHT PLANT FOR SALE.

Two 35 H. P. Fischer C. C. high speed, self-oiling engines, with two 400 incandescent light Triumph dynamos with switchboard.

## W. J. CARLIN COMPANY,

610-611 Lewis Bldg., Pittsburg, Pa.  
NEW YORK OFFICE: 514-515 Park Row Bldg., New York, N. Y.

## ENGINES AND BOILERS.

12 x 36 Lane & Bodley Corliss  
14½ x 15 Phoenix Automatic  
7 x 7 Payne  
14 x 20 Atlas  
11 x 30 Fitchburg  
18 x 26 Buckeye

Engines.

and others second hand. Also

2 46 x 18 Hor. Tubular Boilers.

2 66 x 16 "

Send for complete list of second-hand machinery.

W. D. NORTON, 6th and Carr Sts., Cincinnati, O.

**For Quick Delivery.**

**Single Punches and Shears,**  
 48 in. throat, 1 1/4 in. in 3/4 in.  
 36 in. throat, 1 1/4 in. in 1 in.  
**Splitting Shears,**  
 For 3/4 in., and 1/2 in. plate.  
**Double Angle Shear** for 4 x 4 x 5/8 in. angles.  
**Plate edge Beveling Shear** for 3/4 in. plate.  
**Gate Shear and Multiple Punch,** 78 in.  
**Riveting and Punching Press,** 5 ft. gap.  
**Bending Rolls,** 12 ft. 2 in. between housings,  
 100 in. bet. hgs. for 1 1/4 in. plate.  
**Spacing Table,** hand, 8 ft.  
**Radial Drills,** 48 in. and 60 in. arm.  
**Boiler Makers' Flanging Clamps,** 10 ft.  
**Steam Riveter,** 6 1/4 ft. gap.  
**Duplex Vertical Engines,** 9 x 9.  
**Plate Planer,** 6 ft. cut.

HILLES & JONES COMPANY,  
 Wilmington, Delaware.

**Engine Bargains.**

1 30 in. x 60 in. R. H. Hamilton Corliss, 15 in. shaft;  
 18 ft. fly wheel in 8 sections; rim 12 in. x 15 1/4  
 in.  
 1 18 in. x 32 in. Single Cylinder Link motion Double  
 Drum with friction and brake band Haul-  
 age Engine, made by Webster, Camp & Lane.  
 The above engines are in A No. 1 condition.  
 For Sale by  
 WM. C. JOHNSON & SONS MACH'Y CO.,  
 St. Louis, Mo.

**FOR SALE.****Machine Tools In Experimental Shop.**

One 10 in. x 5 ft. Young Lathe, Compound Rest.  
 One 14 in. x 6 ft. Porter Lathe, Compound Rest.  
 One 18 in. x 8 ft. Oakland Lathe, Compound Rest.  
 One 18 in. Ohio Crank Motion Shaper.  
 One 20 in. Lodge & Davis Shaper.  
 One Brainard Plain Milling Machine, Automatic  
 Feed.  
 One 30 in. Pond Style Pulley Lathe.  
 Two No. 2 Wire Screw Feed Machines, 15-16  
 capacity.  
 One set 6 ft. Boiler Bending Rolls.  
 20 in. Drill complete, auto feed.  
 36 in. Barnes Drill, complete.

THE FAIRBANKS COMPANY,  
 701, 703, 705 Arch St., - Philadelphia, Pa.

**FOR SALE.**

One 150 H. P. Cross-compound Armstrong & Sims  
 Auto Engine. Cylinders 11 1/4 in. and 18 1/4 in. by  
 15 in. stroke.  
 One 10 x 16 Plain Slide Valve Engine.  
 One 13 in. x 12 in. Phoenix Auto. Engine.  
 One 12 in. x 24 in. Wetherill Corliss Engine.  
 One 14 in. x 36 in. Babcock and Wilcox Engine.  
 One 7 in. x 10 in. Atlas Auto. Engine center crank.  
 One 12 in. x 7 in. x 10 in. Duplex Worthington Pump.  
 Also a number of smaller Engines and Pumps.  
 THF E. H. WACHS CO., 158 Indiana St., Chicago.

**CORLISS ENGINES.**

1 26 x 48 Allis Corliss.  
 1 14 x 36 Cooper Corliss.  
 1 14 x 30 Frick Corliss.

**LOCOMOTIVE.**

1 Standard gauge, 4 driver, saddle tank  
 shifting engine, weight 60,000 lbs.,  
 fine shape, cylinders 14 x 22.

One 1-2 Yard Steam Shovel.

One McFlyer Derrick for Hoisting  
 Coal.

GEO. H. BOWLER,  
 513 Williamson Bldg., Cleveland, O.  
 1110 Park Bldg., Pittsburgh, Pa.

**Second-hand Tools  
For Immediate Delivery.**

1 800 lb. Merrill Drop Hammer.  
 1 14 in. x 60 in. Pratt & Whitney Shaping  
 Machine.  
 1 12 in. x 60 in. Bement Shaping Machine.  
 1 10 Pratt & Whitney Tool Room Lathe.  
 1 No. 3 Stiles Punching Press.  
 1 No. 3 Fowler Press.  
 1 54 in. x 19 ft. Planer, double head.  
 1 60 in. Heavy Radial Drill, 4 spindle.  
 1 Small Horizontal Boring and Drilling  
 Machine, Bement.  
 1 No. 13 Brown & Sharpe Milling Mach.  
 1 No. 1 1/2 Pratt & Whitney Hand Milling  
 Machine.  
 1 No. 2 1/2 Newton Duplex Milling Mach.  
 2 No. 5 Cleveland Auto. Screw Machines.  
 1 Lodge & Davis Screw Machine 2 in.  
 1 No. 2 Jones & Lamson Screw Machine.  
 2 36 in. Hydraulic Wheel Presses.  
 1 16 in. Slotting Machine.

**U. Baird Machinery Co.**

123-125 Water St., 124-126 First Ave.,  
 PITTSBURGH, PA.

**POWER PLANT.**

We offer the following complete  
 power plant at a bargain:  
 1 14 in. x 16 in. ENGINE.

1 54 in. x 14 ft. BOILER, with  
 stack and fittings  
 1 No. 3 DEAN STEAM PUMP.

Entire plant is in first-class condi-  
 tion and nearly new. Can be  
 seen running in Indiana. Write  
 for price.

WM. A. READE & CO.,  
 216-217 American Trust Bldg., Cleveland, O.

**Machinery Bargains.****PLANERS.**

34 x 34 x 15 ft. bed, made by Fairbanks, Provi-  
 dence, R. I. Price, \$500.00.

**LATHES.**

Two 16 in. swing, 6 ft. bed, made by Putnam.  
 Price, \$125.00.  
 One 15 in. swing, 6 ft. bed, made by Wood &  
 Light. Price, \$125.00.  
 Two 18 in. swing, 8 ft. bed, made by Campbell &  
 Gage, Waterford, N. Y. Price, \$125.00.  
 One 17 in. swing, 8 ft. bed, made by Campbell &  
 Gage, Waterford, N. Y. Price, \$125.00.  
 One double head lathe, 32 in. swing, 20 ft. bed,  
 made by Campbell & Gage, Waterford, N. Y.  
 Price, \$500.00.  
 F. O. B. cars, Philadelphia, Pa.

A. V. KAISER & CO.,  
 322 South Third St., Philadelphia.

**Wanted to Make**

We have a complete modern manu-  
 facturing plant near Boston, equipped  
 with **Power Presses, Automatic Screw  
 Machines, Nickel Plating and Polishing  
 Plant** and want to correspond with  
 parties having articles that can be made  
 in such a factory. Address

"W."

care The Iron Age, 70 Kilby Street,  
 Boston, Mass.

**WANTED.**

6 to 8 miles of 60 or 65 Relaying Rail with Angle  
 Bars. Must be strictly No. 1 and subject to inspec-  
 tion for immediate delivery. Address  
 I. BRENNER & SON, Pottsville, Pa.

**FOR SALE.**

A Complete Set of Blind Making Machinery.  
 1 Sash and Door Sticker.  
 1 Sash and Door Tenonator.  
 1 Door Sander.  
 1 Sash Mortiser.  
 1 Sash and Door Squeezer.  
 1 Two Spindle Shaper.  
 1 Moulding Sticker.  
 Several hundred moulding knives.  
 1 10 H. P. Westinghouse Engine.  
 1 50 H. P. Stationary Engine and Boiler.  
 1 40 H. P. Stationary Boiler.  
 1 80 H. P. " "  
 1 50 H. P. Portable " "  
 1 30 H. P. " "  
 1 8 H. P. " "  
 1 25 H. P. Motor.  
 1 2 1/2 H. P. " "  
 1 1 1/2 H. P. " "  
 1 Blacksmith Bolt Header with new set of dies.  
 1 D. K. Dederick Perpetual Baling Press, as good as new.  
 3 Enslage Cutters.  
 Write for prices. All of above will be sold cheap  
 for cash.  
 F. R. PATCH MFG. CO., Rutland, Vt.

**Factory Site at  
Niagara Falls.**

Four lots for sale situated upon the Erie Rail-  
 road, with a spur track from same. For particu-  
 lars with ground plan and photograph of the  
 building, apply to

F. W. OLIVER CO.,  
 Niagara Falls, N. Y.

**FOR SALE.**

Hardware stock in a New England city of 60,000  
 inhabitants. First class location and an up-to-  
 date store and stock (Incorporated). Inventory  
 \$10,000.00 to \$12,000.00. Address

BELCHER & LOOMIS HARDWARE CO.,  
 Providence, R. I.

**AN AGENT OF MANUFACTURERS  
OF FRENCH PRUNERS**

of the best marks is open for an agency of Ameri-  
 can horticultural tools and implements or analo-  
 gous articles in ironmongery. High class refer-  
 ences will be given. Apply to  
 H. JOUBERT,  
 14 Rue Crussol, Paris.

**FOR SALE.**

17 ft. 13 ft. Boring and Turning Lathe.  
 1 29 in. x 8 ft. Engine Lathe.  
 1 26 in. x 8 ft. " "  
 1 12 in. x 5 ft. " "  
 1 12 in. x 4 ft. " "  
 1 30 x 31 x 8 ft. Worcester Mch. Co. Planer.  
 1 Flather's 16 x 6 ft. Monitor Fox Lathe.  
 7 Lincoln Millers.  
 1 Upright Splaning Machine.  
 Write for list.

HANNAN & FINTON, Springfield, Mass.

**WANTED.**

A well established machine tool shop, located on  
 the Rhine, Germany, desires the services of a first-  
 class, experienced constructing engineer, one  
 familiar with the designing and construction of  
 hydraulic machinery adapted to ship-building.  
 Position permanent to the right man one conversant  
 with the German language preferred. State  
 salary and reference, addressing "ENGINEER,"  
 care The Iron Age, 20-22 Pickering Bldg., Cincin-  
 nati, Ohio.

**FOR SALE.  
AT A BARGAIN.**

1 Second hand Corliss Engine, 14 in. x 42 in.  
 1 Blake Stone Crusher, 15 x 9 with screen.  
 1 Dean Duplex Steam Pump, 5 x 3 1/4 x 5.  
 3 Edson Diaphragm Pumps.

WM. FLINTOFF, Haverhill St., Boston.

**FOUNDRYMEN.**

We have for sale a complete Foundry  
 for making Stoves. Will sell whole or part.

The Thomas & Lowe Machinery Co.,  
 Providence, R. I.

**FOR SALE OR TO LET.**

Drop Forge Works, building 40 x 130 ft., all  
 fitted up with modern tools. 3 Drops. 3 Power  
 Presses. Machine Shop. Japanning Plant.  
 Shears. Brick Boiler House. 2 Steel 40 horse-  
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 plete Oil-Fuel Plant. Side track in yard, no shift-  
 ing charges. For information address

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**FOR SALE.****SPECIAL ENGINES.**

- 1 14 in. x 20 in. (Vertical) Slide Valve.
- \*1 14 in. x 30 in. Keystone Corliss (Brand new).
- \*1 11 in. and 19 in. x 24 in. Tandem Comp'd "Buck-eyes" (latest type) with condenser.
- \*1 22 in. x 42 in. Wetherill Corliss.
- \*1 23 in. x 48 in. Geo. H. Corliss make.
- 1 24 in. x 36 in. Macintosh, Hemphill & Co.
- 1 36 in. x 60 in. Tangye Red type.
- 1 Crane Elevator Co. Modern Elevator Engine.

**BOILER.**

- 1 Horizontal Tubular, 72 in. x 16 ft., with 84 3/4 in. tubes, approved for 100 lb. pressure, complete.

**SHAFTS AND PILLOW BLOCKS.**

- 15 Very fine Forged Shafts, finished all over, 10 in. diam. to 16 in.

**FLY WHEELS.** For Balance and for Belts.**SMOKE STACK.**

- Very fine steel self-supporting stack, 64 in. diam., 100 ft. high, with case casting, ornamental top and ladder.

**HAMMERS.**

- 1 Hackney Cushion Hammer.
- 1 1200 lb. Double Frame Steam Hammer.
- 1 4 ton do.

**SHEARS.**

- 1 New Alligator Shear with capacity up to 2 1/2 in. Cold Bilets, or for Scrap cutting. Knives 14 in. long.

**LOCOMOTIVES, New and Second-Hand**

- \*Signifies Right-hand.
- \*Signifies Left-hand.

**B. M. EVERSON,**

German Nat. Bank Bldg (6th and Wood),  
PITTSBURG, PA.  
Sales Agent for  
Baldwin Locomotive Works, Phila.

**Bargains in Locomotives.**

Ten 16 x 24 Standard Gauge Locomotives, weight 33 and 35 tons; also one 20 ton Standard Gauge Locomotive, all with tenders; one 30 in. Gauge Locomotive and one Standard Gauge Maddle Tank Locomotive, weight about 9 tons. One 15 ton Buffalo Pitts Road Roller and one No. 3 Gates Crusher mounted on wheels.

GRANT &amp; WILLIAMS.

323-324 Park Row Bldg., New York, N. Y.

**For Sale Cheap.**

- 7 Contractors' Plows, No. 99 "Syracuse."
- 6 Contractors' Plows, No. 1 "Syracuse."
- 1 Portable Saw Mill, complete.
- 1 6 in. Centrifugal Pump.
- 3 Gleason & Bailey Pumps, No. 2.
- 3 Derrick Hoists.
- 5 No. 1 Jenne Jacks.
- 50 Two Wheel Road Scrapers, Western Wheel Scraper Co.
- 6 Narrow Gauge Dump Cars, 36 in.

SMITH &amp; CAFFEY,

Syracuse, N. Y.

**For Sale.**

- One 30 x 48 Corliss Upright Engine, with 80 ten sectional fly wheel.
- One 20 x 20 Upright Slide Valve Engine, complete, with Judson governor and 12 foot by 30 inch balance band wheel. It has also a 16 x 20 cylinder with steam chest.
- One 4 and 2 six inch Judson governors, complete and in good order.

PENN IRON CO., Lancaster, Pa.

**FOR SALE.**

Car Wheel Lathe: bed, 10 ft. 4 in. long, 6 ft. wide; face plate, 80 in. in diameter; weight, 5 or six tons; price, \$250; f. o. b. cars Hartford.

THE WHITLOCK COIL PIPE CO.,  
Hartford, Conn.

**Second-hand Machinery For Sale.**

Engines, Boilers, Pumps, Heaters, Iron and Wood Working Machinery, all makes, all kinds. Shafting, Pulley Hangers, Boxes, etc. Mining, Cupola and Forge Blowers. We make a specialty of Saw and Planing Mill Machinery.

HARRIS MACHINERY CO.,

1045 Washington Ave., S. E., Minneapolis, Minn.

**FOR SALE.**

150 H. P. Erie Engine in first class condition, with automatic cut-off, used about one year. Also one large solid iron Pulley, 6 ft 9 in. diameter, 6 in. hole, 12 in. crown face keyway, 1 3/8 in. wide, 3/4 in. deep, hub 10 in. diameter.

Address

THE STANDARD TOOL COMPANY,  
Cleveland, O.

**FOR SALE.**

One Pond Planer, 36 x 36 x 17 ft.

One New Haven Lathe, 25 in. swing, 16 ft. bed.

One Vertical Engine 14 x 14, roughtry valve, self contain.

One Sturtevant Steel Blower, 68 in. high, 26 inlet, 22 outlet.

Also one Atlas 10 x 12 Engine.

Also a large lot of iron tanks.

WM. ECKBOLDS' SONS,

711 E. Girard Ave., Philadelphia.

**FOR SALE.**

One Corliss Engine, 26 in. x 60 in., fly wheel 20 ft. diameter, section of rim 15 1/2 in. x 11 in. One Multiple Drill Press, four spindles, 8 ft. between housings, built by Messrs. Bement, Miles & Co. for drilling holes in plates.

Five trains of plate rolls. One 9 ft Flywheel, new, 7 in. bore, weight 6000 lbs. Two Bliss Guillotine Upright Shears, 72 in. gap, 8 in. stroke. One Dean Duplex Pump, 6 x 5 1/4 x 6. One Rod Straightening Machine, built by the Medart Patent Pulley Co. for straightening rods up to 3 in. diameter and 25 ft. long. A lot of extra cold and hot plate rolls (new) and numerous other items from the Olney Copper Plant.

HENRY A. HITNER'S SONS,

Gaul and Sargeant Sts., Philadelphia.

**Machinery.****SECOND-HAND, FIRST-CLASS ORDER.**

- 3-16 in. Adt Rotary Wire Straightener, five dies, with loose pulley on stand.
- 25 lb. Justice Power Hammer.
- 50 lb. Power Hammer (Dinelt & Eisenhardt).
- 25 lb. Bradley Helve Hammer.
- 40 lb. Bradley Helve Hammer.
- 500 lb. Merrell Board Lift Automatic Drop Hammer.
- 1500 lb. Morgan & Williams Double Standard Steam Hammer.
- 800 lb. Pratt & Whitney Board Lift Automatic Drop Hammer.
- No. 7 Jarecki Pipe Machine.
- 2 1/2 in. to 12 in. Curtis & Curtis Pipe Machine.
- 3-16 in. Adt style "D" Riveting Machine.
- Garvin Single Spindle Profiler.
- No. 1 Warner & Swasey Screw Machine with wire feed.
- No. 3 Pratt & Whitney Screw Machine with wire feed.
- No. 1 Bliss Foot Press.
- Brown & Sharpe Polishing and Finishing Lathe.
- No. 2 Plain Milling Machine (Reed).
- No. 3 Hand Milling Machine (Garvin).
- No. 8 Milling Machine (Brainard).
- No. 4 Milling Machine (Brainard).
- No. 2 Diamond Wet Tool Grinder.
- No. 5 Niagara Sifting Shear.
- 18 in. throat Power Punch.
- 3 1/2 in. throat Power Shear.
- 24 in. throat Power Shear.
- 14 ft. Boiler Plate Planer.
- No. 86 Niagara Bench Screw Press.
- 6 in. Boynton & Plummer Shaper.
- 15 in. Remy Shaper.
- 18 in. Jungs Shaper.
- 15 in. Garvin Spinning Lathe.
- 10 in. and 13 in. Sensitive Dri Is.
- 20 in. Barnes Drills.
- Plating Dynamos from 500 to 700 gallons capacity.
- Plating Tanks.
- 14 in., 16 in., and 21 in. Engine Lathes.

**NEW.**

Engine Lathes 12 in. to 31 in. Swing, various lengths of bed.

10 in. to 40 in. Drill Presses, standard makes.

Nos. 1, 2 and 3 Cincinnati Full Unit Milling Machs.

No. 2 Cincinnati and No. 2 Elsey Plain Milling Machs.

36 x 36 x 12 ft. Gray Planer with two heads.

Write us for any machinery wanted, or what you may wish to exchange or sell.

C. C. WORMER MACHINERY CO.,  
Pt. of Shelby Street, Detroit, Mich.

**WANTED.**

A Small Portable Iron Annealing  
Furnace, second-hand.

ALBERT KRIMMERT,

Bowling Green Bldg., New York.

**FOR SALE.**

A foundry plant in complete operation, employing 40 molders, and doing a large and profitable business, making a line of staple specialties, sales of which can be increased to almost any extent. The plant is situated in an inland city in a Central Western State, and railroad facilities are exceptionally good. The owner wishes to retire. This is a splendid opportunity for a good practical foundry man with some capital; or a partnership could be formed with the practical men in charge of the different departments. Address

"FOUNDRY PLANT,"  
care The Iron Age, New York.

**FOR SALE,  
SECOND-HAND TOOLS.**

Three "Bryant" Cold Saws.

One "Whitcomb" Planer, 37 in. x 36 in. x 9 ft.

One "Cockburn" Concrete Mixer.

One "Sturtevant" Blower, No. 8.

One do. do. No. 5.

Two Horizontal Tubular Boilers, 66 in. x 16 ft. with 90 three-inch tubes, now running under 80 lbs. pressure.

**ALSO**

**NEW CORNELL BLOWERS**—Poole's patent, all sizes—the best in the market—send for prices.

J. B. &amp; J. M. CORNELL,

36th St. and 11th Ave., New York City.

1-30 in. x 48 in. Corliss Horizontal Engine. 1-11 in. x 24 in. Slide Valve Engine. 1-8 in. x 10 in. Erie Engine. 3-125 Horse Horizontal Tube Boilers. 1-150 Horse Horizontal Tube Boiler. 1-135 Horse Upright Corliss Boiler. 3-20 Horse Upright Boilers. 1-300 Horse Berryman Feed Water Heater. 1-Hydraulic Riveting Machine 36 in. gap. 1-Boiler Plate Planer, 16 ft. long, very heavy. 1-Power Shears. 1-Double Arbor Milling Machine. 1-18 in. Swing Lathe, short bed. 1-Horizontal Boring Machine. 3-New Woodward Steam Pumps. Several small lathes, screw cutting. 2-Double Belts, one 104 ft., one 86 ft. x 15 in., Hoyt's make. Large stock of belting various sizes. ROBT J. GRAY, 52-54 East 134th St., New York

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Blacksmith and Wheelwright's Shop, consisting of Drills, Tire Benders, Upsetters, Forges, Blowers, Bolt Cutters, Punch and Shears, Vices, etc. All nearly new.

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Tools lately in use in Boiler Manuf'g Plant.

1 40-ton 36 in. Gap Hydraulic Riveter.

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A Power Sheet Shears to cut 1/4-inch plate and lighter. Also one that will cut 14 gauge and lighter. Address

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**Angles, Beams,  
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5000 tons in stock. Moderate prices. Send for stock sheet and quotations.

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Designers, Manufacturers and Erectors of Structural Iron Work, Dealers in Structural Materials.

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Light and Heavy Cast Machinery, and Stove Plate Cast.

Send full description of material with lowest cash price, Phila. delivery.

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**BEAMS, CHANNELS,  
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Eye Beams, from 4 ins. (7½ lbs.), to 20 ins. (65 lbs.)  
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Zee Bars, 8 ins. x 4 ins. and 5 ins.

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All material in 50-ft. lengths or cut to specified lengths if desired. Send for detail stock list.

All material in stock, and will be shipped immediately on receipt of order.

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125 Tons 50 lb. Steel.  
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All Extra Fine.

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23,000 feet 20 in. Cast Iron Water Pipe made by K. D. Wood & Co., 170 lbs. to foot, in 12 ft. lengths in first class condition for re-use.

Will be sold in lots to suit.

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A small foundry fully equipped for Grey Iron Castings. Situated on main line of railroad 30 miles from New York. Can give immediate possession. Address

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Several locomotives, standard and narrow gauge.

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All Southern delivery.

New and Second-hand Freight Cars.

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140 tons 35-lb Steel, with splices  
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21 Cylinder Boilers, 12 1/2 in. diameter, 30 ft. long and 12 3/8 in. diameter, 30 ft. long wrought iron heads, suitable for stack; also two Narrow Gauge Baldwin Locomotives.

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I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

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We are fully equipped with latest appliances for handling this work, especially that required for Bicycle or Automobile manufacture, and are prepared to quote low prices for those interested. Estimates for this class of work gladly furnished on application. Correspondence solicited.

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Two 60-inch by 16 feet Peter Ammerman & Son Boilers, guaranteed 80 pounds pressure. Also one Woodruff & Beach 16 x 36 Engine. The above are all in first-class condition, and can be seen at our Factory.

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### Patent For Sale.

All metal wheel patent for sale. Adapted for use in all kinds of vehicles, simple in construction and very durable.

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THIRD LOFT, 25 X 100 FT., CORNER CHAMBERS AND CHURCH STS.,

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33 lbs. Steel T Rails, El Paso, Tex., delivery.  
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56 lbs. Steel T. R. - lbs for delivery between Buffalo and Chicago on line of Nickel Plate R. R.  
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62 lbs. Grooved Girder Johnson Steel Rails, Washington, D. C., delivery.  
83 lbs. Grooved Pennsylvania Steel Girder Rails with bolts, nuts and chairs for Chicago delivery.  
330 tons of new 25 to 45 lbs. steel T Rails, Chicago delivery.

Material subject to inspection at points of shipment.  
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### TWO IRON BRIDGES.

Each of two spans 124 feet, with a draw span of 350 feet and 200 feet, these are railroad bridges, comparatively new; were taken out because too light for new heavy rolling stock. Will make splendid wagon bridges, will sell all together or separate spans; terms to suit.

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18 x 43 Corliss Engine in A1 condition, also 60 H. P. New Era Gas Engine in excellent condition, which has been running only six months. Both ready for delivery about Oct. 1st. Can be seen during working hours. Apply

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### For Sale, Cheap

One 10 x 24 Corliss Engine. Also one No. 10 Davidson Steam Pump.

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"A new wheel made in halves, 30 ft. in diameter, 50 inches face, turned for belt, bored 15 inches, weight 45,000 lbs.  
This wheel was never used, is all right and will be sold at a bargain.

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36" x 30" x 16' L. W. Pond, in good order. Seen at Holyoke, Mass. Also 400 other new and second-hand machine tools.

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By F. O. BAILEY & CO., Auctioneers,  
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Important Auction Sale of the John P. Lovell Co. Factory, Machinery, Tools, etc., at South Portland, Maine.

By order of assignees we shall sell on Tuesday, August 14th, at 10 a.m., on the premises, the valuable property known as the John P. Lovell factories, situated at South Portland, Me. The property consists of a lot of land of about five acres, is situated on Portland Harbor, by electric cars within ten minutes of Portland. On the property is a large brick mill, 235 ft. long by 83 ft. wide, with cemented floor; also adjoining mills 150 x 47 and one 90 x 40, two stories, built of wood. Brick mill was built in 1893; wooden mills in 1898. Factory is equipped with an automatic sprinkler system, large and convenient boiler house with 85 horse power boiler and 85 horse power Buck-Eye engine, both of which are in first-class condition. Mill is also equipped throughout with shafting and piped for heating. This valuable property is finely located, and a desirable property for most any manufacturing business. Immediately following the sale of real estate will be offered the entire fittings, machinery and personal property of the factories, in lots to suit. The machines and tools are up to date and very desirable. A descriptive catalogue of the personal property and material to be sold will be furnished upon application to Nathan Clifford, 57 Exchange St., Portland, Me., or the auctioneers. Terms at sale.

### ALABAMA CONSOLIDATED COAL AND IRON COMPANY.

27 William St., New York, July 19th, 1900.

The Board of Directors have this day declared a quarterly dividend of One and three-quarters per cent. on the Preferred Stock of the Company to stockholders of record July 25th, 1900, payable Aug. 1st, 1900.

The transfer books will close July 25th, 1900, at three o'clock P.M., and will reopen Aug. 1st, 1900.

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### WANTED

AT ONCE: one 12 x 12 Norwalk Compressor, in first class condition. Give full particulars.

CHAS. M. HAMPSON,  
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Some large industry to come and locate at the finest natural harbor on Lake Erie. Have good railroads and can furnish any amount of land very reasonable. Possibly our town would pay for the land.

Address "LAKE ERIE,"  
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### FOR SALE.

Wholesale and Retail Hardware Business. Long established in complete running order. An opportunity that seldom comes on the market. Inspection invited. Address owners,  
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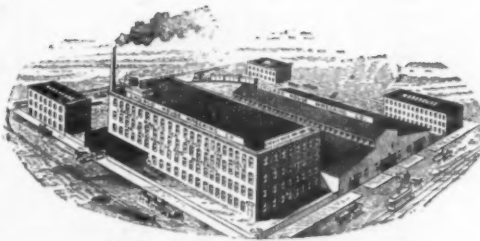
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We have the largest plant of its kind on earth, occupying over 1,000,000 feet of space.

**Our New Machinery Hall**, just completed, has a floor space 200 x 360 feet, and is exclusively devoted to the display of the vast quantity of items in the machinery line.

**Our facilities** for rebuilding machinery are unsurpassed. We thoroughly inspect and overhaul all items in this line and cover all sales by a binding guarantee.



We are constantly receiving additional items in this line and our stock is changing every day.

We purchased the World's Fair of Chicago, Trans-Mississippi Exposition of Omaha, Neb., the Chicago Post-Office and Sub-Treasury Buildings and many other noted structures and institutions.

**Our Catalogue No. 78** contains a complete record of all we handle. Write for it to-day.

## WE OFFER THE FOLLOWING ITEMS. SUBJECT TO PRIOR SALE.

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WE PURCHASED FROM ARMOUR & CO. OF CHICAGO all the boilers formerly used in their plant. They are all in excellent condition, and have only been taken out because of a change in their motive power from steam to electricity. **There are 70 in all, 48 of them 60 x 18 and the balance 54 x 16 and 60 x 16.** They are types of the finest boilers ever installed in any plant, and we will thoroughly overhaul and place in as good condition as they were when new.

WE HAVE OTHER BOILERS, a few of which we list, as follows:

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- No. A 110 5 48 x 16 horizontal tubular
- No. A 111 9 48 x 14 horizontal tubular
- No. A 112 4 56 x 14 horizontal tubular
- No. A 113 5 54 x 16 horizontal tubular
- No. A 114 3 63 x 16 horizontal tubular
- No. A 115 2 60 x 14 horizontal tubular
- No. A 116 1 44 x 14 horizontal tubular
- No. A 117 2 66 x 16 horizontal tubular
- No. A 118 1 34 x 10 horizontal tubular
- No. A 119 6 36 x 30 cylinder
- No. A 120 1 48 x 28 cylinder
- No. A 121 1 40 x 20 cylinder
- No. A 122 1 40 x 26 cylinder
- No. A 123 2 36 x 24 cylinder
- No. A 124 4 48 x 22 cylinder
- No. A 125 1 26 x 10 1/2 locomotive fire box
- No. A 126 1 32 x 11 locomotive fire box
- No. A 127 36 x 7 vertical
- No. A 128 1 30 x 6 vertical
- No. A 129 1 75 H.P. Havelton
- No. A 178 1 12 ft. Ames portable
- No. A 130 4 44 x 21-2 due 14 in.
- No. A 131 3 48 x 28-2 due 16 in.
- No. A 132 1 40 H.P. steel tubular
- No. A 133 1 marine fire box 9 ft diam., 18 ft. long
- No. A 134 1 marine fire box 7 ft. diam., 18 ft. long
- No. A 135 1 25 H. P. Milburn
- No. A 136 1 24 x 4 upright

### LOCOMOTIVES, FLAT CARS, &c.

- No. A 137 30 gondola cars, 40,000 lbs. capacity, plain drop bottom, length over all 34 ft., width over all 9 ft. 6 in.
- No. A 138 1 Brooks type locomotive, No. 4 cylinder, 16 ft., stroke 26 in.
- No. A 139 1 four driver saddle tank shifting locomotive, total weight 60,000 lbs.
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- No. A 141 6 flat cars, capacity 40,000 lbs., weight 17,000 lbs., 33 ft. x 8 1/2 ft., in first-class condition.

### PUMPS.

- A.H. 47 1 Delamater single acting, steam cyl. 4 in.
- A.H. 48 1 Cameron single acting, steam cyl. 4 in.
- A.H. 49 1 Cameron single acting, steam cyl. 4 1/2 in.
- A.H. 50 1 Deane single acting, steam cyl. 4 in.
- A.H. 51 1 Blakeslee single acting, steam cyl. 3 in.
- A.H. 52 1 McGowan duplex, steam cyl. 4 in.
- A.H. 53 1 Davidson single acting, steam cyl. 4 in.
- A.H. 54 1 Hooker single acting, steam cyl. 3 1/2 in.
- A.H. 55 1 Blakeslee single acting, steam cyl. 4 in.
- A.H. 56 Gorden & Maxwell duplex, steam cyl. 3 1/2 in.
- A.H. 57 1 Wells single acting, steam cyl. 3 1/2 in.
- A.H. 58 Norwalk single acting, steam cyl. 5 in.
- A.H. 60 Crane single acting, steam cyl. 6 in.
- A.H. 61 Lechtenberg single acting, steam cyl. 6 1/2 in.
- A.H. 62 Lechtenberg single acting, steam cyl. 5 1/2 in.
- A.H. 63 1 Blake single acting, steam cyl. 6 1/2 in.
- A.H. 64 Knowles single acting, steam cyl. 6 in.
- A.H. 65 Knowles single acting, steam cyl. 3 1/2 in.
- A.H. 66 1 Norwalk single acting, steam cyl. 3 in.
- A.H. 67 1 Hook single acting, steam cyl. 4 in.
- A.H. 68 1 Hall duplex, steam cyl. 4 in.
- A.H. 69 1 Deane single acting, steam cyl. 4 in.
- A.H. 70 1 Worthington duplex, steam cyl. 4 1/2 in.
- A.H. 71 Niagara single acting, steam cyl. 5 in.
- A.H. 72 1 Dayton, single acting, steam cyl. 5 in.
- A.H. 73 Gold duplex, steam cyl. 3 1/2 in.
- A.H. 74 Blakeslee single acting, steam cyl. 3 1/2 in.

- A.H. 75 2 Gall duplex, steam cyl. 3 in.
  - A.H. 77 1 Gall duplex, steam cyl. 12 in.
  - A.H. 78 1 Holland single acting, steam cyl. 6 in.
  - A.H. 79 1 donkey single acting, steam cyl. 4 in.
  - A.H. 81 1 donkey single acting, steam cyl. 2 in.
  - A.H. 82 2 Lechtenberg single acting, steam cyl. 5 1/2 in.
  - A.H. 84 1 Lechtenberg single acting, steam cyl. 6 1/2 in.
  - A.H. 85 1 Holly single acting, steam cyl. 5 1/2 in.
  - A.H. 86 1 Niagara single acting, steam cyl. 4 1/2 in.
  - A.H. 87 1 Hall duplex, steam cyl. 5 in.
  - A.H. 89 1 Hooker single acting, steam cyl. 3 1/2 in.
  - A.H. 90 2 Lechtenberg single acting, steam cyl. 3 1/2 in.
  - A.H. 92 Blake single acting, steam cyl. 5 1/2 in.
  - A.H. 93 Smithvale single acting, steam cyl. 5 in.
  - A.H. 95 Blake single acting, steam cyl. 4 in.
  - A.H. 96 Hall duplex, steam cyl. 4 in.
  - A.H. 97 Niagara single acting, steam cyl. 3 1/2 in.
  - A.H. 98 Knowles single acting, steam cyl. 5 in.
- In addition to above we have over 200 other patterns. Get complete list.

### ENGINES.

- No. A 20 3 x 5 upright
- No. A 21 3 1/2 x 2 1/2 Kane, marine
- No. A 22 3 1/2 x 5 center crank automatic
- No. A 23 4 x 4 self contained Westinghouse
- No. A 24 4 x 6 upright
- No. A 25 5 x 7 upright
- No. A 26 5 x 7 Willard horizontal
- No. A 27 7 x 10 center crank
- No. A 28 7 x 12 on wheels
- No. A 29 7 x 12 traction
- No. A 30 8 x 12 Lansing horizontal
- No. A 31 8 x 16 Russell Gibbs
- No. A 32 8 x 24 stationary
- No. A 33 9 x 12 Nagel
- No. A 34 9 x 12 center crank
- No. A 35 9 x 14 Atlas automatic
- No. A 36 9 x 16 Stedman
- No. A 37 9 1/2 x 12 Armstrong & Sims automatic
- No. A 38 9 1/2 x 14 Payne compound
- No. A 39 10 x 9 New York Safety
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- No. A 41 10 x 12 upright Fritz
- No. A 42 10 x 14 Watertown side crank
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- No. A 44 10 x 16 Erie ball
- No. A 45 10 x 18 center crank
- No. A 46 10 x 24 center crank
- No. A 47 10 x 20 center crank
- No. A 48 10 x 20 Atlas
- No. A 49 10 x 18 stationary
- No. A 50 10 1/2 x 18 stationary
- No. A 51 11 x 12 automatic Westinghouse
- No. A 52 8 x 12 pair Atlas
- No. A 53 11 x 20 Atlas automatic
- No. A 54 11 x 18 stationary
- No. A 55 12 x 12 Ideal
- No. A 56 12 x 12 Armstrong & Sims
- No. A 57 12 x 12 Atlas
- No. A 58 12 x 16 balance valve
- No. A 59 12 x 18 Lansing
- No. A 60 12 x 20 Sinker & Davis
- No. A 61 12 x 20 upright
- No. A 62 12 x 12 center crank
- No. A 63 12 x 20 horizontal tangye
- No. A 64 12 x 20 x 12 Westinghouse automatic compound
- No. A 65 12 x 20 x 14 Ball automatic compound
- No. A 66 12 x 24 Zeahm Bros.
- No. A 67 12 x 20 horizontal slide valve
- No. A 68 12 x 24 horizontal slide valve
- No. A 69 13 x 16 Erie automatic
- No. A 70 13 x 16 horizontal slide crank
- No. A 71 13 x 18 four valve Russell automatic
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- No. A 76 14 x 24 box bed
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- No. A 82 18 x 30-250 H.P.
- No. A 83 20 x 22 Corliss
- No. A 84 20 x 36 Corliss
- No. A 85 20 x 42 Corliss
- No. A 86 26 x 48 Corliss
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- No. A 90 10 H.P. Davis & Rankin
- No. A 91 10 H.P. slide valve
- No. A 92 40 H.P. slide valve
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- No. A 106 19 H.P. Lewis gasoline
- No. A 107 50 H.P. Raymond gasoline
- No. A 108 6 H.P. Atlas
- No. A 109 10 x 20 side crank
- No. A 110 174 Otis furnace hoist engine, 2 cyl., 8 x 10
- No. A 111 177 13 x 16 twin engines, tandem bed
- No. A 112 179 7 x 14 Ames cylinder

### COMBINED BOILERS and ENGINES.

- No. 142 1 combined Davis & Rankin 8 H.P.
- No. A 143 1 10 x 14 engine boiler, 12 ft. long
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- No. A 146 1 20 H.P. portable engine and boiler, made by Frisby & Logue
- No. A 147 1 9 1/2 x 16 fire box boiler and engine
- No. A 148 1 10 x 15 Baxter combined engine and boiler
- No. A 149 1 8 H.P. combined
- No. A 150 1 25 H.P. combined portable
- No. A 151 1 hoisting engine and boiler, 6 x 12, made by Kendall & Bro.
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**Kelly's Directory.**—Kelly's Directories, Limited, London, England, have just issued their fourteenth edition, which is the revision for 1900, of their monumental work, "Kelly's Directory," containing lists of the merchants, manufacturers, shippers and buyers of the world. It is a book of over 3500 pages, and not only contains the lists of business people as stated, but also the statistics, weights, money, trade-marks, postal arrangements, tariffs, British shipping lists and other useful information desired by and of special use to those who are conducting an exporting or importing trade. The work is arranged systematically, and in many cases careful classifications enable the use of the book much more conveniently than if mere lists were given without regard to classes of business. The price of the complete work is \$10 to subscribers and \$12.50 to non-subscribers. The publishers are also getting up on Engineers' Directory of England, which will be out soon.

**The Building Trades Pocket-Book** is published by the International Correspondence Schools to meet the demand among architects, engineers, contractors, builders and artisans for a handy reference book on matters pertaining to Structural Design, Masonry, Bricklaying, Carpentering, Joining, Roofing, Plastering, Painting, Plumbing, Lighting, Heating and Ventilation. The book is packed with valuable information, rules, data, tables, &c., and contains several hundred good cuts illustrating details of construction, &c. The volume is largely original and treats the subjects simply, the calculations requiring only a knowledge of simple arithmetic. 380 pages, leather bound, for pocket, price.....\$1.50

**Travelers and Business Men** generally will read with interest and profit "The Knight of the Grip," which attractive book is a reprint of the serial article of this title which appeared in *The Iron Age*. The hardware traveler is the hero of these sketches, mostly taken from life; they are both serious and amusing and relate to his position in the trade; the companionableness of the traveler; his temptations, his methods and manners, &c. The volume contains 179 pages, is bound in cloth, and sold at.....60 cents.

**Galvanizing and Tinning.**—A book will be issued shortly by the publishers of *The Iron Age*, entitled "Galvanizing and Tinning," devoted to a practical and detailed description of coating with tin and zinc, with a special chapter on tinning gray iron castings, by W. T. Flanders, an expert in this line. These processes have been somewhat secret heretofore on account of the skill of workmanship required and the dearth of information on methods of doing the work. The tools and appliances in use will be described and illustrated.

**Factory Accounts.**—The English work on factory costs by J. Slater Lewis, entitled "The Commercial Organization of Factories," provides a system for bringing every account in a factory into line monthly, and effecting a general balance. The methods set forth in this work have been extensively employed by American manufacturers with in many cases certain modifications or changes. C. W. Hunt, formerly president of the American Institute of Mechanical Engineers, in an address before the members of the institute strongly recommended this work and has adopted the Lewis system very largely in the accounts at the works of the C. W. Hunt Company, W. New Brighton, N. Y. This work is sold at..

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**Gas Engine Construction.**—A practical work on the building of gas engines is just published, entitled "Gas Engine Construction," by Henry V. Parsell and Arthur J. Weed. A one-half horse-power engine is taken as a basis for treatment, the work of construction being described and illustrated progressively and in detail. Working drawings of the various details are given. The volume contains 300 pages, cloth bound, price..

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**Lobben's "Machinists' and Draftsmen's Hand-Book,"** recently published, is a practical hand-book for young engineers and machinists who are ambitious to fit themselves for more advanced work. It contains information with tables, rules and formulæ such as are required for reference in all mechanical and engineering work, and will be found to be an excellent manual for the student and for the young working mechanic. 432 pages, 12mo, illustrated. Price .....

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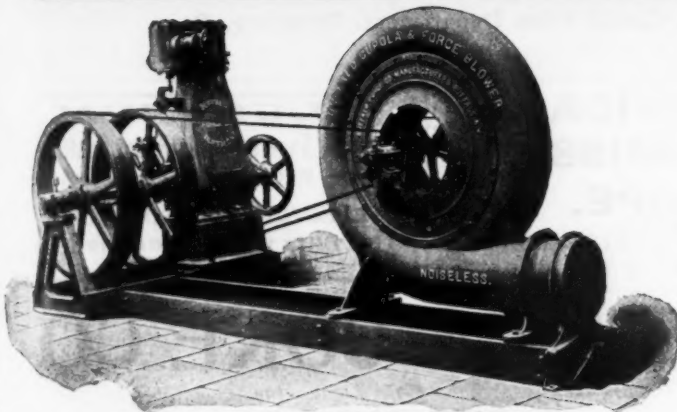
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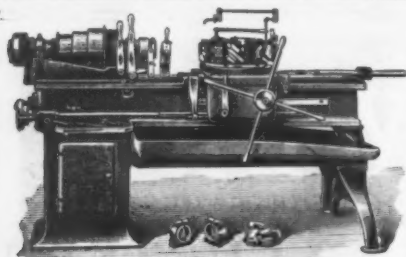
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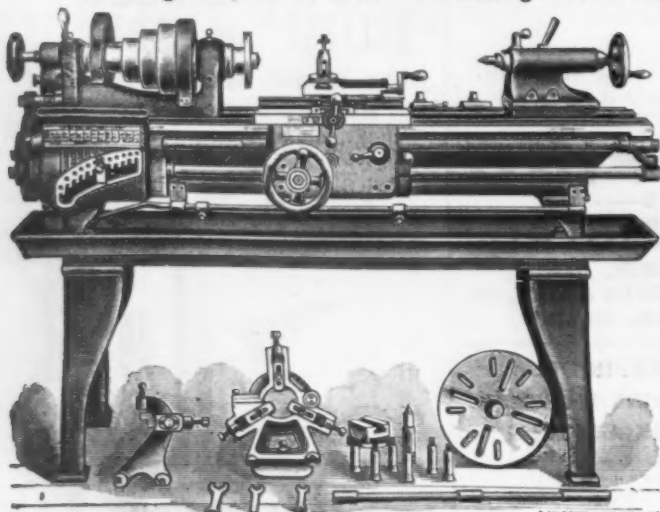
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# THE IRON AGE

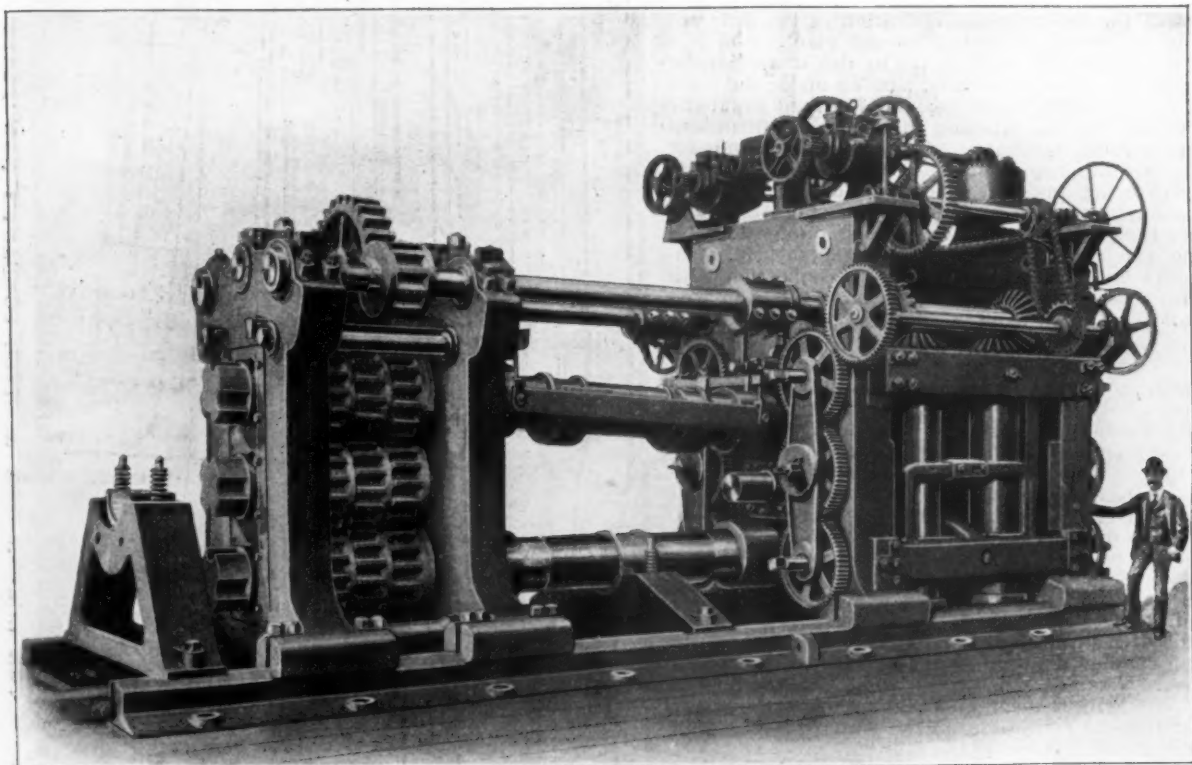
THURSDAY, JULY 26, 1900.

## The Lukens Iron & Steel Company's New Plant.

The Lukens Iron & Steel Company of Coatesville, Pa., enjoy the distinction of having been the first to make boiler plates in America. The plant started by the progenitors of the present company was established as a rolling and slitting mill about 1790, moving to the present location in 1810 and first making boiler plates about 1825. From the first the works have continued in the ownership and continuous successful operation of the family under which they were started. The company under the present name were incorporated in 1890, succeeding the copartnership of Charles Huston & Sons.

They were pioneers in successfully making the flanging of boiler heads a part of the work of the plate mill.

They have always been foremost in making careful tests of structural material, both iron and steel, and the late president of the company, Dr. Charles Huston, was largely instrumental in the formulation of specifications for material adopted by the pioneers in this line, such as the Hartford Steam Boiler Insurance Company, the United States Board of Inspectors of Steam Vessels, various bridge building concerns and others. Their appliances for testing materials are of the most approved character; their testing room is equipped with two Olsen machines, of 100,000 and 200,000 pounds capacity, respectively, with massive milling machines for the rapid preparation of test specimens.



*The First Three-High Universal Plate Mill.*

## THE LUKENS IRON & STEEL COMPANY'S NEW PLANT.

The record of this establishment has been one of continued progress. Unlike many other old establishments, the reputation of the past has not been depended upon to secure business, but improvements have been made from time to time, as rendered necessary by the progress of manufacture of plates. The business has been kept closely in line with all the changes that have developed in recent years. These have at times been decidedly radical.

### **An Enterprising Establishment.**

They were among the first boiler plate manufacturers to advocate the use of open hearth steel plates in the construction of boilers, making their plates from slabs purchased from steel manufacturers both in America and Europe. When the supremacy of steel was first being recognized they built their own open hearth steel plant, thus providing themselves with their own stock.

Their connection with the boiler trade has also led them to engage in the specialties required in boiler making. Thus they make quite a large steel product in the shape of patent boiler braces constructed of plate steel and boiler manheads pressed from plate steel. The brace is crimped and formed into shape under hydraulic pressure without welds, making it much stronger than the ordinary brace made of welded bars, and the manhead with its yoke is also hydraulic pressed from plate steel and fitted with a bolt fastened to the manhead by a patent method very simple and effective.

Until this year the company had manufactured sheared plates exclusively, their facilities for this purpose having been of the best character. The largest of their plate trains, installed in the winter of 1890, is of the modern three-high pattern, with rolls 120 inches in length, fitted with automatic tilting tables and served



with a hydraulic crane, enabling one man to draw ingots from any one of the number of heating furnaces and delivering them on the roll feeding tables. This mill has just been enlarged with rolls 134 inches long and 36 inches in diameter, enabling the company to roll plates up to 132 inches in width. These plates are machine straightened while hot.

#### The New Plant.

The next step taken by the company, during the season of 1899, was the addition of a large plant composed of a 48-inch universal mill with a new open hearth furnace plant, all complete, and which is this year being supplemented by the addition of a slabbing mill more massive than any at present in operation in the country, making the new plant, which is set forth in the accompanying ground plan illustration, one of the finest in the country. A description of this new plant we give below, taking each portion by itself.

Attention is called, in the first place, to the high trestle running the entire length of the west side of the plant. This trestle is about 25 feet high, and, in connection with its shorter counterpart, shown on the opposite side of the plan, serves the whole plant with coal for boilers and gas producers, as also with all classes of material in bulk, such as limestone, iron ore, sand, &c. The bottoms of the cars only need to be dropped and the material falls by gravitation near the man who needs to use it.

This whole plant, as also the older portion of the plant, is served by a narrow gauge railroad, having a number of little locomotives and a great quantity of iron trucks for the intercommunication of the different parts of the establishment. The old plant, which is not shown in the plan, is connected by this steam narrow gauge railroad through a tunnel passing under the main line of the Philadelphia & Reading Railroad Company (Wilmington branch), bringing the entire establishment into intimate communication, not only for the transfer of materials in process of manufacture, but also for quickly carrying any rolls, parts of machinery, &c., to the company's own repair shops. These shops are large and very complete, including roll lathes, automatic knife grinding machines, large punching and shearing machines (the latter especially for use in connection with the flanging and boiler specialty departments), as well as standard machine tools.

#### The Universal Mill.

In adding this department the special features of universal mills in other parts of the country have been carefully studied, with a view of securing a mill that would overcome many difficulties heretofore encountered, and also as many advantages as possible in increased production, fine finish and turning out straight plates of the very great lengths now required. It is installed in its own separate building, which, like all the main buildings of the company added in recent years, is of steel construction, strictly fire proof.

It is arranged, as will be seen by the plan, in "I" form, of 400 feet total length, the center part being 130 feet wide over all, while the end spans are transverse to the main span of the center building. This center span contains roll trains, engines, mill roller tables, run out tables, cooling bed, shear tables and shears, the latter being at the end furthest from the furnaces. The plan of handling will be seen by the illustration.

The furnace end is supplied with an electric crane of special design, built by the Morgan Engineering Company of Alliance, Ohio. This crane is of very ingenious construction, described hereafter, enabling the operator to charge and draw ingots or slabs from the heating furnaces and place them on an extension of the mill tables which reaches nearly to the middle of this building. The ingot is then delivered by the roller tables to the mill, where it is handled entirely by power devices back and forth through the successive passes in the mill, and the finished plate is delivered hot to the run out tables and cooling bed. It is gradually moved sidewise, when cold, to the roller table feeding the shears, where it is cut to the proper length, passing through the shear opening and falling from the shear upon the rolls at one end of the shipping department. Here it is weighed and carried by a long overhead traveling crane, furnished with several trolleys, which lifts the long plate in such a manner as to prevent bending by its own weight directly into the car for shipment, or into its proper place in the shipping warehouse. It will be noticed that while there are only four heating furnaces shown in the illustration, provision is made for the extension of this part of the building, as well as the shipping end, in order to accommodate the increased demands.

The 50-foot lean-to at the side of the main span contains the power plant furnishing steam for the universal mill proper, also steam to blow a large battery of producers, both for mill and open hearth furnaces. The

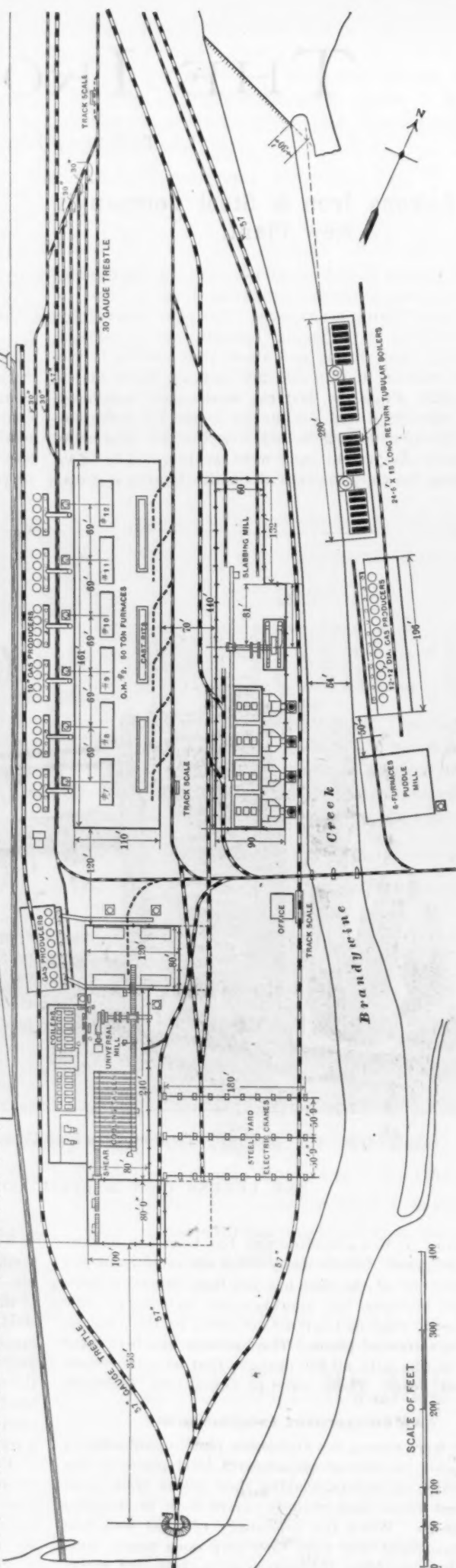


Fig. 2.—Ground Plan.

THE LUKENS IRON & STEEL COMPANY'S NEW PLANT.

electric power plant, which is also supplied with steam from the same battery, consists of two 150-kw. direct connected generators, which, with the addition of a third of about 250 kw., will furnish electric power and light for the whole of the company's works, including the new slabbing mill. These electric engines are compound condensing to secure the greatest economy. The boilers are supplied with Roney automatic stokers, economizers and the modern induced draft system, in which the draft is furnished by exhaust fans and which take the place of the customary tall chimney, the chimney in this case reaching merely through the roof.

The mill is driven by a large compound condensing engine, built by Wm. Tod & Co., Youngstown, Ohio, with cylinders 34 inches and 60 inches, respectively, by 5-foot stroke. It is of their latest automatic piston valve type, and is capable of varying speed anywhere from 60 to 120 revolutions per minute. The mill is a radical de-

culty has been encountered in the rolling of universal plates, because of the impossibility of properly proportioning the speed of the vertical rolls to that of the horizontal rolls, owing to the fact that as the metal is reduced in thickness the incoming and outgoing ends have a different rate of speed, and as the direction is reversed each alternate pass, one or both pairs of vertical rolls is obliged to slip to some extent on the metal, causing undue wear of the rolls and their driving mechanism, besides a lot of "back lash," which is very destructive to machinery. In addition to this the utmost precision has to be observed in maintaining the alignment, and, withal, it is very difficult to prevent the rolls on the outgoing side from working hard against one edge of the metal, thus injuring the finish of the edge and causing curves in the plate hard to eliminate.

In this three-high continuous running mill, however, the vertical rolls on the outgoing side are, as will be

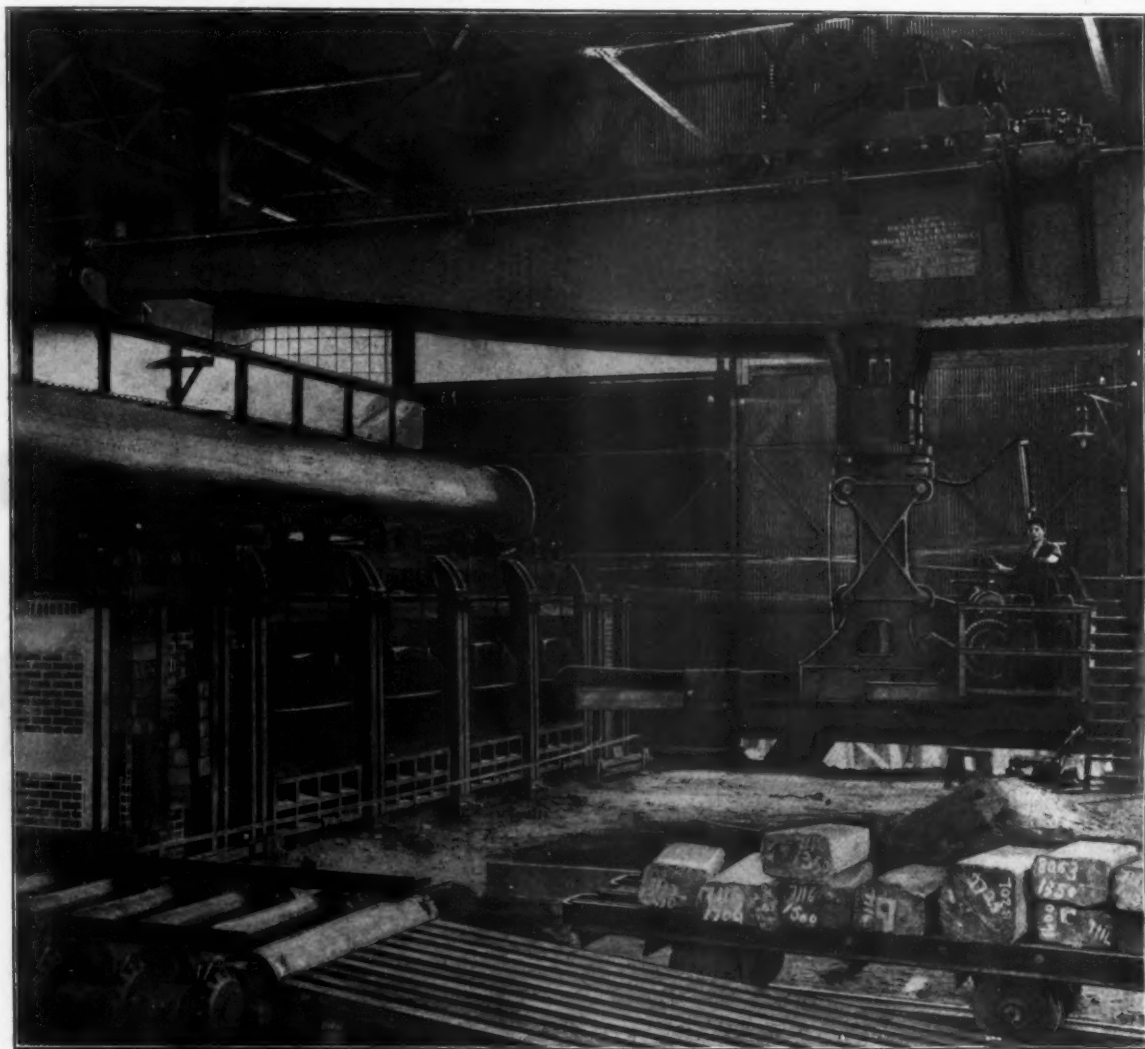


Fig. 3.—The Morgan Electric Ingot Charging Machine.

#### THE LUKENS IRON & STEEL COMPANY'S NEW PLANT.

parture from universal mills heretofore constructed. Such mills, as a rule, have been of the two-high reversing type, while this is the first three-high universal plate mill in which the middle roll is raised and lowered alternately against the top and bottom roll, as in the largest sheared plate mills of modern construction, which have proved so successful both in fine finish and large tonnage of product. It was built by the A. Garrison Foundry Company of Pittsburgh from a design furnished by the Lukens Iron & Steel Company.

In the illustration this mill is shown without the tables. All the rolls are chilled. The horizontal rolls are 28 inches in diameter, with an intermediate roll of 20 inches diameter. The vertical rolls are 18 inches diameter, with 12-inch diameter journals, much stronger than the proportions usually found. These rolls are capable of rolling a plate varying in width anywhere between 9 inches and 48 inches, with lengths up to 100 feet or more.

In the ordinary two-high reversing mills much diffi-

seen by the illustration, reduced in diameter, thereby clearing the plate, so that there is no danger at this point either of spoiling the plate or of back lash in the machinery. On the entering side the vertical rolls have their full working diameter maintained, which may be properly proportioned to the horizontal rolls so as to avoid any conflict of speed. Thus the plate is operated upon by the vertical rolls on the side passing in, while the vertical rolls on the opposite side clear the plate by reason of their smaller diameter. The hanging guides to the middle roll are mounted in a special manner and supported by an adjustable device at the outer ends, so as to secure a firm bearing. The vertical rolls are provided with a special pull back device and the horizontal rolls with a quick roll relieving appliance, all of which are necessary to the successful operation of the mill. These points, together with the distinctive features of the mill itself, are being covered by suitable patents by C. L. Huston, the inventor.

The roll train is supplied with modern hydraulic tilt-



ing tables, the rolls of which, as well as the receiving run out, side transfer and shear tables and the shears themselves, also a large shear some distance up in the yard, are all operated by independent electric motors, the object being to secure power distribution as far as possible by electricity, although the plant is equipped with four systems of power—viz., steam, hydraulic, electric and pneumatic—each being used for the purposes for which it is best fitted. The tables for this mill were built by Henry Aiken, Pittsburgh. The shears are capable of cutting plates up to 2 inches in thickness by 48 inches in width, cold. The mill is very strongly built, and throughout the whole plant steel castings are largely used to secure immunity from breakage and consequent stoppage of the plant. The gas for the heating furnaces is furnished by a battery of Talbot gas producers conveniently located, as will be seen.

In addition to the electric cranes already mentioned, the main portion of the building over the roll train tables,

easily withdraw the sliding grip and the gripping arm be raised free. It will be seen that the whole appliance is rotated upon its vertical axis, can be hoisted up and down, moved to and fro upon the length of the bridge, which, with the addition of the traveling of the bridge itself, secures a practically universal movement, so that the pieces can be grasped at any point from the narrow gauge railroad trucks upon which they are delivered to the building and placed in any part of each furnace, and carried again, when hot, and delivered upon the extension roller tables ready for rolling. Its capacity is 12,000 pounds net weight handled, which, with the liberal provision for strength practiced by the Morgan Company, gives a large margin of safety.

#### The New Steel Plant.

The new open hearth plant occupies a building 460 feet long by 110 feet wide. In this are located six 50-ton basic open hearth furnaces of the latest design, built by the S. R. Smythe Company, Pittsburgh. They are equipped with very large regenerators, requiring about 35,000 bricks each for checker work. The regenerators are not directly under the furnaces, but are kept back under the charging platform so as to avoid the risk of

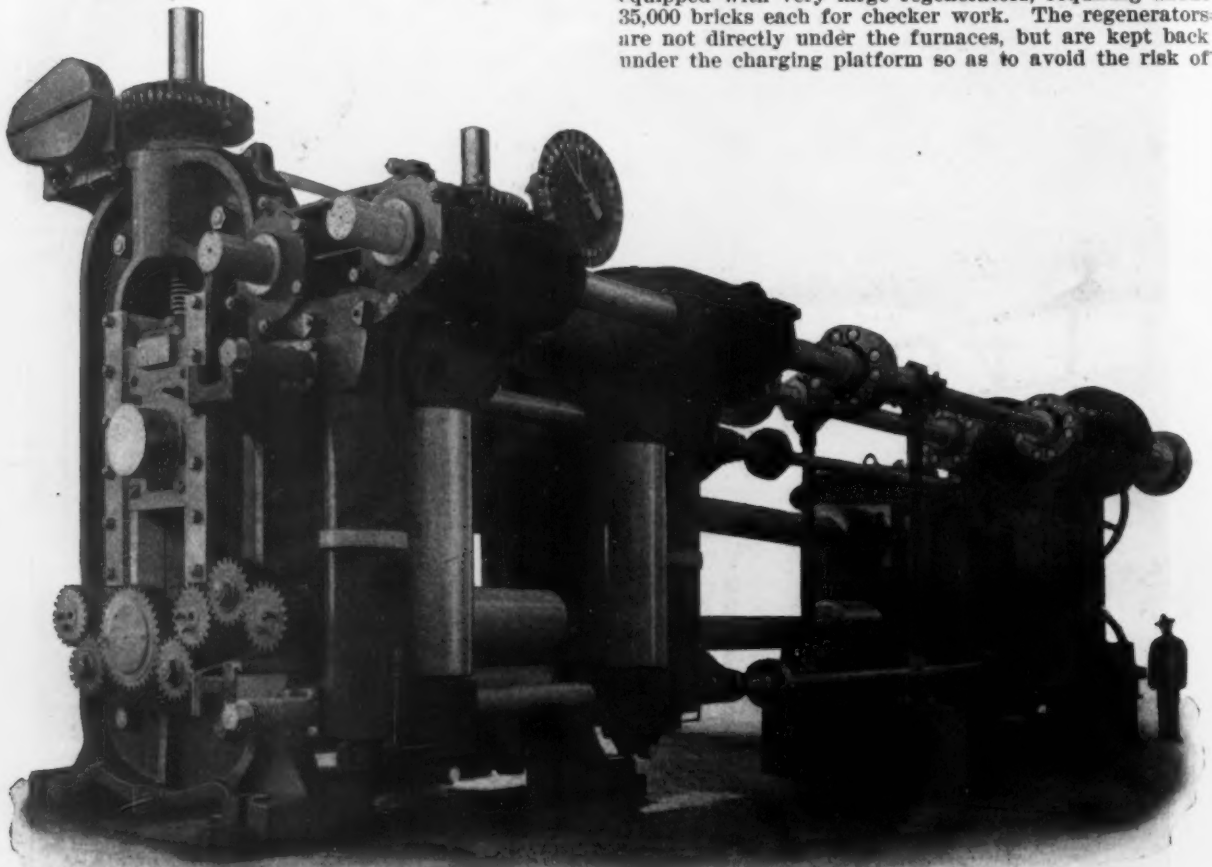


Fig. 4.—Front View of the Slabbing Mill.

#### THE LUKENS IRON & STEEL COMPANY'S NEW PLANT.

&c., is entirely covered by a 20-ton double trolley traveling crane the full span of the building, so that any part of the machinery can be quickly removed and replaced in case of breakage or needed repairs.

#### The Ingot Charging Machine.

The special ingot charging machine, built by the Morgan Engineering Company, above referred to, is worthy of more detailed description. An illustration is given, taken from a photograph. The span of the main overhead bridge is 76 feet 7½ inches and it travels the whole length of the building. The trolley is of novel design and construction, being made up of structural steel and steel castings so as to secure lightness combined with strength. The gripping arm is maintained at all times in a horizontal position. The ingot or slab is gripped endwise, the movement of the sliding grip being accomplished by an electric motor to suit the varying lengths of pieces, while the actual gripping is done by transmission through a system of levers, so that the weight of the piece itself and of a portion of the cage is utilized to secure a powerful grip. When the load is lowered and rests upon the furnace bottom or the tables this gripping pressure is released so that the motor can

being choked with slag, the furnace proper being supported upon massive fire brick masonry and very strongly bound with steel beams and tie rods. They are fed with a Wellman patent electric charging machine, which moves up and down in front of all the furnaces upon a charging floor substantially supported by a steel under structure, entirely independent of the furnace masonry. The ingots are cast upon a floor at a lower level in the half of the building opposite to that in which the furnaces lie, this portion of the building being covered by five electric traveling cranes, three of them being of standard type of 10-ton cranes built by Pawling & Harnischfeger of Milwaukee, Wis., the other two being powerful ladle cranes of 75 tons normal capacity each, built by the Morgan Engineering Company.

The stock for these furnaces is conveyed from the yard to the elevated charging floor by means of the narrow gauge railroad system, running up an inclined trestle, so that the charging boxes which are used in connection with the electric charging crane can be loaded at any convenient point in the yard below, either from the stock piles or from the railroad cars in which material is received, and delivered promptly to the charging floor in front of the furnaces. The producer gas for these fur-

naces is furnished by 24 Talbot gas producers, arranged in separate batteries along the side of the building under the high coal trestle, providing each furnace with its own battery of four producers, thereby making each furnace, with its producers, a separate unit, a feature which steel makers will appreciate as of special value. All of the producers, like the remainder of the plant, are covered by steel buildings suitably constructed for the protection of the workmen from the weather. A large Weiss condenser, built by the Southwark Foundry & Machine Company, Philadelphia, will take the exhaust steam not

nearly 500 tons of steel, the plan of operation being that the ingots shall be received hot from both the old and new open hearth plants, so that comparatively little heating will be required to bring them up to the proper condition for rolling out into slabs suitable for the finishing mills. The lean-to will also have a smaller crane of about 30 feet span running its whole length for the purpose of changing furnace valves, engine parts, &c.

The mill was designed by Julian Kennedy of Pittsburgh, and built by the Morgan Engineering Company. It is practically made of steel throughout, no iron casting being used in any place where stress would come upon it. It is of the universal type and will roll slabs up to 54 inches in width, of any desired thickness up to 24 inches. The main rolls are 34 inches in diameter by 108 inches long, the extra length beyond the 54-inch straight part in the center being composed of standard grooves of 4, 6, 8 and 14 inches for the ready rolling of billets and slabs of these sizes without the use of the universal principle, the vertical rolls being capable of being thrown back past the line of the main housings, so as to leave the full width of the main rolls free.

The vertical rolls are driven by a separate pair of reversing engines through an ingenious arrangement of double worm gear which runs in a bath of oil and is carefully protected from the heat beneath, so as to secure length of life of the gear. The main driving spindle is of a new design, 20 feet long, being hollow forged steel, made by the Bethlehem Steel Company, and fitted with a special universal joint connection to the roll and pinion, which secures freedom from back lash in reversing and at the same time adds great length of life service. The main pinions, as also all the gearings, are made from steel castings, oil tempered, annealed and with machine cut teeth.

The engines were built by McIntosh, Hemphill & Co., Pittsburgh, and are of the reversing type, the main driving engines having cylinders 46 inches in diameter by 60 inches stroke. The auxiliary reversing engines for the independent operation of the vertical rolls are mounted

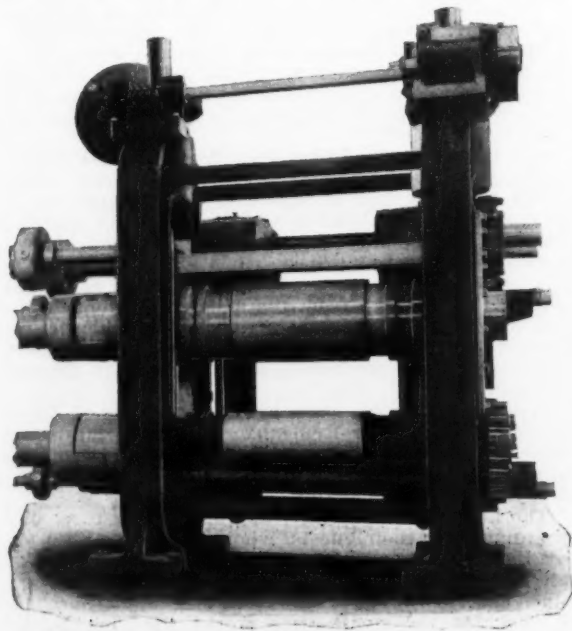


Fig. 6 - The Slabbing Mill Rolls.

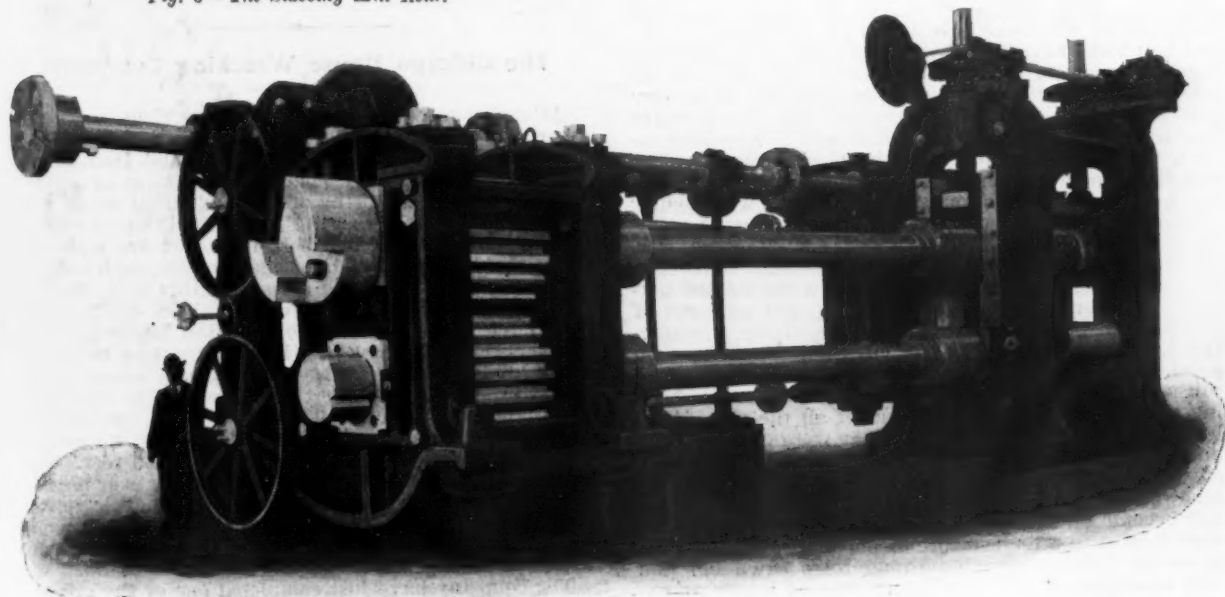


Fig. 5. - Rear View of the Slabbing Mill.

#### THE LUKENS IRON & STEEL COMPANY'S NEW PLANT.

only from the new mills but also from the old mills, making one central condenser plant.

##### The Slabbing Mill.

This is conveniently located, as will be seen, so as to be central between the old and the new plants. It is covered by a building 440 feet long and 90 feet wide, composed of a main span 60 feet and a lean-to 30 feet, the lean-to not running quite the full length of the main building. This will be covered by electric cranes spanning the 60 feet and running the whole length of the building, ordinary three-motor cranes being used at the shearing end and a special five-motor crane at the other end to serve the four heating furnaces, which are of the soaking pit type, of special design and large capacity. Each furnace is calculated for a normal charge of 240,000 pounds, made up of 12 ingots of 20,000 pounds weight each, the whole four furnaces when charged holding

on the same foundation and have cylinders 26 x 30 inches. The mill tables are fitted with hydraulic manipulators and are made up from turned steel rollers, with liberal sized journals, mounted in steel casting bed plates, and, like the shear tables of similar construction, are driven by electric motors through steel gear wheels, which, like those in the mill, are all oil tempered, annealed and machine cut. These tables were built by McGill & Co., Pittsburgh. The adjustment of the main and vertical roll screws is accomplished by means of separate electric motors under the control of a man conveniently situated.

The distance from the center of the mill to the shears is 118 feet, the total length from the first end of the mill tables to the shears being 158 feet. The shears are hydraulic and designed for great strength. They are operated by two vertical steam rams or intensifiers situated alongside of them, and are capable of cutting at one



stroke a hot slab of any size up to 24 inches thick by 48 inches wide. The intensifiers have steam cylinders 65 inches in diameter by 96 inches stroke, the water end being 10 inches in diameter. The battery of boilers will be of about 4000 horse-power capacity, fitted with automatic stokers, &c. The mill will also have producers like those of the open hearth and universal mill departments, of the Talbot type, the boilers and producers both being served with coal from the elevated trestle, in a similar manner to those already described on the opposite side of the plant.

#### A Very Extensive Plant.

These additions will put the works of the Lukens Iron & Steel Company close to the top among the largest producers of plates in the country, and in fact in the world. Their plant previous to these acquisitions comprised six 35-ton open hearth steel furnaces, a 134-inch plate mill, an 84-inch plate mill, punch and machine shops, &c., and had ranked as one of the leading plate works of the United States. They are now equipped for furnishing very large quantities of universal as well as sheared plates, whether desired of acid or basic open hearth steel, and can also furnish slabs and billets.

The present officers of the company are as follows: President, A. F. Huston; vice-president, Charles L. Huston; secretary and treasurer, Joseph Humpton.

#### American Society of Civil Engineers.

The thirty-second annual meeting of the American Society of Civil Engineers was held in London, England, during the first week in July, at the Institution of Civil Engineers, Great George street, Westminster. The proceedings began with an official welcome to the visitors from Sir Douglas Fox, the president of the Institution of Civil Engineers. John F. Wallace, president of the American Society, then delivered his presidential address.

The paper of greatest interest, our English contemporaries state, was one read by Robert W. Hunt of Chicago on "Iron and Steel Rails," in which he called attention to the large production of the present time, one mill alone having turned out as much as 58,103 gross tons in a month. This faster work had somewhat altered the character of the steel in rails, but other considerations had not been neglected, and the outward character and finish had been improved to a radical extent. Another point to which Mr. Hunt drew attention was the standardization of rail specifications in America. At one time almost every railway had its own peculiar section; the variations were slight, but sufficient to require the use of special rolls in their manufacture. Mr. Holley in 1881 obtained from the 11 Bessemer mills then making rails in the United States drawings of 188 patterns considered standard ones, while 199 patterns of 27 different weights per yard were regularly manufactured. The American Society of Civil Engineers appointed a committee to consider the question of standard rail sections. This reported in 1893, and it was gratifying that in 1899 quite 75 per cent. of all the rails rolled by American rail mills were of what were commercially known as the American Society sections. He next spoke of the satisfactory wearing powers exhibited by rails renewed by the McKenna process, by which rails that had become unfit for further service in main line tracks were heated to a temperature of not more than 1500 degrees F., passed through forming rolls, sawn hot and cold straightened. This treatment was no longer an experiment, for nearly 100,000 tons were in use, and so satisfactory did they promise to be as regards wear that one chief engineer, on whose road many were in use, said, "No rail ought to be used at all until it has been renewed." As a steel rail maker and an observer of the wear of rails of many sections and diverse chemical composition, he was led to advocate, first, that work after careful heating of the steel should be continued until the temperature had been much reduced, and, second, that the carbon percentages should be increased in proportion to the increase of rail section, the ultimate amount being of necessity limited by the contained percentage of phosphorus.

The discussion was opened by A. L. Colby, who read a short abstract of a "Critical Review of Foreign Specifications for Steel Rails," which formed a section of an elaborate paper to be read in Paris the following week. In view of the export of rails from America to British colonies, he spoke of the specifications for these as compared with general American practice, pointing out that some of the requirements were, in his opinion, superfluous and merely tended to increase prices unnecessarily. Sir Lowthian Bell gave some account of observations and experiments that had been carried out on rails supplied to the Northeastern Railway Company.

#### American Engineers in Berlin.

BERLIN, July 18, 1900.—The banquet given at the Zoological Garden this evening by the firm of Ludwig Loewe & Co., rifle and gun makers, to the visiting delegation of mechanical and civil engineers, who arrived yesterday, took on the character of a fraternalization of Americans, Germans and English as the leaders of the world's progress. The principal speakers were from the United States, Germany, England and Australia.

Commerzienrath Isidor Loewe, president of the firm, who made the first address, emphasized the indebtedness of German industry and of his own firm to the Americans. C. H. Morgan, president of the American Society of Mechanical Engineers, in his response, expressed astonishment at the extent to which American ideas had been introduced into Germany by Ludwig Loewe & Co., adding: "We must do something in America to meet this new competition."

Mr. Dickle of the Union Iron Works, San Francisco, emphasized the humanitarian care shown by Ludwig Loewe & Co. for their workmen, in which respect he said the Germans were ahead of America. "We in America," remarked Mr. Dickle, "have forgotten the man, the soul, in order to promote business."

John B. Jackson, secretary of the United States Embassy, said he spoke from the standpoint of one whose task it was to help promote friendly relations between Germany and the United States. He thanked the Loewe company heartily for having done so much in the same direction.

Speeches also were made by Thomas Irons of Australia, and by Professor Reuleaux, who came into prominence at the time of the Centennial Exhibition in Philadelphia because of his reference to the German exhibit there as "cheap and shabby."

The Loewe company have arranged a fine three days' programme for their guests, who number about 60. To-day the Americans visited the Loewe Tool Works, and subsequently the small arms works. The former contained \$200,000 worth of American machinery, purchased in 1898. At the small arms works the visitors were shown a new army pistol firing a hundred shots a minute.

#### The Chicago House Wrecking Company.

Attention has been called at various times to the peculiar enterprise conducted by the Chicago House Wrecking Company, West Thirty-fifth and Iron streets, Chicago. The company conduct a business of such a character that it is worthy of more extended notice than has thus far been given it. They not only carry on such work as is indicated by their title, but are also very heavy dealers in all kinds of merchandise and material from all sorts of realizing sales. In this way they are very extensive dealers in new as well as old material. They have grown from quite a modest beginning until they now claim to have the largest depot in the world for all kinds of merchandise and material, which is purchased in such manner that they are able to offer it at remarkably low prices. They have just completed a machinery hall as an addition to their large warehouse, which occupies a ground space of 200 x 360 feet. This is undoubtedly one of the largest structures ever devoted to the exclusive display of machinery. They have also introduced extensive facilities for rebuilding second-hand machinery, and claim that these facilities are unsurpassed by any other establishment of the kind.

The company have just completed one of the greatest machinery purchases in the West—namely, the complete boiler outfit formerly used by Armour & Co. of Chicago. This firm, who recently installed a new plant, found it expedient to replace their boilers by others of a larger type and thus sold the old boilers to the Chicago House Wrecking Company. This purchase gives them possession of some of the finest horizontal tubular boilers ever made. They consist in all of about 70 boilers, whose sizes are 60 inches by 18 feet, 60 inches by 16 feet, and 54 inches by 16 feet.

The company issue catalogues of the merchandise they have on hand, which present a wonderfully varied assortment of goods running into all classes of manufactured products.

Should the vote now being taken among officials of the Amalgamated Association to give the committee discretionary power to change the basis of the scale be carried, it is probable a conference with the manufacturers will be called at once. However, there does not seem to be an active desire on the part of either the officials of the Amalgamated Association or the manufacturers themselves to have the puddling and bar iron scales arranged, so that it is possible another conference will not be held until the first week in August.

# THE GERMAN MACHINE TOOL MARKET.

## Present Conditions and Future Prospects.

### EDITORIAL CORRESPONDENCE.

BERLIN, June 28, 1900.—The fact is acknowledged on all sides that the extraordinary boom in Germany is over. With us a collapsed boom would conjure up the specter of bad times, the fear of years of famine after months of feast. The Germans, although they have had the experience of short lived periods of industrial activity, face the future with confidence. They claim that their present universal prosperity is the creation of much deeper influences than those governing an industrial revival with us, that it is the result of their present position as a world power, attained through their high rank as an educated, industrious, frugal, earnest and thoughtful people, who have first learned during the last 30 years to struggle for and to enjoy the fruits of prosperity. The latent energies of the nation have been diverted into productive channels, and their enterprise is tempered with the prudence and foresight bred by centuries of straitened circumstances. They feel confident that the work of internal improvement and of expansion abroad has too powerful a headway to be checked now or in the early future by accidental causes; that their progress is backed with means far beyond those ever before at their command. Even if it were not fully justified, the existence of so universal a feeling of confidence would, in itself, be a powerful factor in behalf of the movement until a succession of startling shocks saps its strength. Of such there is not the slightest indication, and the quieting down along the whole line industrially is accepted rather as a welcome resting spell to precede renewed conquests than as a warning to trim ship all around.

Under the circumstances the machinery business in Germany has shown unmistakable evidence of slackening, but it is not believed that this portends so serious a falling off in the demand that disastrous consequences must result either for the German builders themselves or for the importers of American machinery. In some branches the German works are still so well employed that they cannot touch orders for delivery under a year, this being particularly the case with the locomotive builders and the engine makers. Still, generally speaking, in machine tools the current requirements are light, and your correspondent has heard of cases in which some makers of heavy tools are working for stock. The majority of importers acknowledge that new business has been very light lately, and there is good reason for the belief that for this reason they have been forced to cancel orders heavily with their principals in the United States.

The extraordinary development of the German import trade in American machinery was due to a series of causes, which it is well to study in order to arrive at some conclusions as to the future. Numerical expression of its magnitude is not readily arrived at, because German firms handle considerable American machinery for neighboring countries, notably Russia, Austria-Hungary, Italy and Switzerland. Much of this machinery merely goes through Germany in transit, while other quantities are transhipped from the free harbor of Hamburg. The statistics, therefore, do not furnish a trustworthy guide, and besides the figures are reported in quantity only, and not in values. Our own export statistics, of course, fail to give Germany credit, as a purchaser, for machinery sent via Belgium and Dutch ports. However, it is hardly necessary to dwell upon the magnitude of the business, since it is a well-known fact, frequently alluded to in the columns of *The Iron Age*, that in the dull years of 1895 to 1898 the export orders amounted to

anywhere from 15 to 60 per cent. of the total output of a very large number of American shops.

The demand for Germany proper has been very large. In 1898 and in 1899 orders went to the United States for certain classes of machinery, notably heavy machine tools, simply because the German makers were so full of work that they could not make reasonable deliveries. The events of the past few months make it pretty certain that business of this character need no longer be expected. Conditions of a different character, too, tell against its continuance—a fact thoroughly well recognized by American makers. The result has been that such interests as the Niles met them by starting a German shop, the completion of which will further narrow down the possibilities of imports into Germany of American built machinery of a certain type. But after all, this has only been a casual business, made possible by the overcrowding of the German shops, now a phase which has passed away.

It is in the medium and small standard tools and in special appliances that the future lies of the American makers and their allies, the German importers. Those who have studied the situation claim that, broadly speaking, a large demand is in sight, since the progressive Germans more and more realize the necessity for remodeling their equipment and their methods along American lines, modeled and modified to suit their local requirements. The point is made that while that demand may halt for a time, the movement in that direction is irresistible, and its magnitude is usually underestimated rather than overrated.

The question is, who shall supply that demand, and this is what is perplexing even the best informed. It involves some very serious considerations of tariff policy. It involves the whole great problem of methods and cost of manufacture on both sides of the Atlantic. It is affected by the influences which grow out of national characteristics. It brings up the question to what extent American manufacturers, or German importers, or both, must sacrifice a part of their profits, to meet imitations, or to struggle against transplanted industries.

### The Agitation for Higher Duties.

We shall in the next few years hear much of the agitation now actively started in Germany to impose higher duties on American machinery. At present the duty is really nominal, amounting as it does to 3 marks per 100 kg., including packing, which figures about 20 per cent. in weight, and carries the duty to, say, 0.4 cent per pound. The German manufacturers of machinery demand a revision, their chief argument being that liberality is unwise and unfair in relations with a country which, like the United States, imposes upon German machinery a duty of 45 per cent., and which meets the products of German industries generally with practically prohibitory rates.

As yet no definite proposals have been discussed, nor are they likely to be brought forward until the fall, but the opinion is freely and generally expressed that as the situation now stands an increase in the duties is more than probable. Under existing treaties, however, any new rates which may be established cannot go into effect until January 1, 1903, when the treaties negotiated under the Caprivi ministry shall have expired. Some of the importers of American machinery view the future with grave concern; others argue that very high rates are not likely, and that what advance is established will have to be taken from the American selling price. One merchant urges that the Germans would simply be checking their own progress by rendering the best equipment



more expensive to themselves, and added that it is a curious phenomenon that among the most ardent advocates of a higher duty on American machinery are the owners of shops who have been pioneers and leaders in the adoption of American machine tools.

There can be no doubt that the existence of high rates of duty in our own country is a powerful argument for those who, in Germany, insist upon retaliation as a pretext for furthering their own interests. Those who are identified with the commerce between the two countries urge, as a wise measure, that the force of this argument be broken by concessions, by lowering of our own duties. These, they claim, have manifestly ceased to be operative, since we are exporters, and are safe against any invasion of our home markets. While this may be true, it appears very doubtful whether concessions in this direction, obviously of little efficacy, would really change the course of action of the Germans. They realize that the development of the American machinery business has placed in their hands another means of coercion, which apparently they are inclined to use to their best advantage, the agricultural interests having another welcome ally in their crusade of exclusion against American food products. It is very doubtful whether a tariff war or threats of war will accomplish what a gradual but steady change in public opinion in the United States will surely bring about in the end. The Germans have shown a somewhat truculent spirit, which may retard rather than hasten a mutually satisfactory understanding.

While some American machinery has been imported into Germany in recent years from necessity, the great bulk of the very large business has been done solely on the merits of the articles, and in spite of some adverse circumstances. It is admitted, and it is quite clear from even superficial observation, that it has been very remunerative to the dealers handling the machinery. They deserve and are entitled to their success, since they overcame general skepticism in the United States, and did valiant work among consumers. At a time when business was at low ebb in the United States, they provided a great amount of welcome work. But there have been attracted into the business a considerable number of new firms, and competition has become keen and active.

#### Mistakes Made.

As was only natural, some mistakes were made in the rush of rapidly expanding trade, and machines were placed which were not always suitable for the special requirements. At times, apparently an excess of zeal in promising results led to disappointment. Sometimes partial failure was due to the fact also that the buyers themselves did not follow instructions. In other cases, the material which goes into German shops is not up to our American standards. Thus the castings often are so hard that the capacity of the metal working tools is cut down far below the standard attained readily in the United States.

It is only fair to state, too, that slovenly work and poor materials have characterized the product of some of the American machine shops who have sold for export. Then, too, there is well grounded complaint not only that deliveries have been irregular and unsatisfactory, but that more remunerative orders for the home market have crowded aside earlier export orders.

All these occurrences have somewhat dampened the ardor for American tools in certain quarters, but the general result of their introduction has been exceedingly favorable to their further use. In fact, it hardly needs more than the announcement that a new article is American to secure for it careful attention. Hostility, due to intensely conservative spirit, is rarely met with.

The Germans acknowledge, with some limitations, the superior merit of American machinery in general and of American machine tools in particular. But they are determined to assert their equality in those lines in which they claim even now to be doing as well as we, and they are resolute in their purpose to catch up with us in branches in which they still, reluctantly, acknowledge inferiority. They will not rest until they produce at home what they are now forced to buy abroad, a spirit which Americans cannot help but admire.

One step on this direction is the slavish copying of American machinery down to the most insignificant detail. This is a phase of competition with American makers of which much is made, and which is brought to the attention of every visitor. It is an evidence of weakness. It may be temporarily annoying, but the imitator cannot become seriously dangerous at any time. It is the producer who seizes the spirit of the progress of others and develops along independent, original lines who needs watching, and it is in this direction that the Germans have shown a good deal of talent.

#### Competitors Classified.

There will be as factors in the German machinery market the following:

1. The imitators of American machines, who copy slavishly and market a usually inferior tool at a cut price.
2. Those German builders who, while following American lines in a general way, develop independently and make adaptations to meet local and special requirements. These manufacture in modern plants, splendidly equipped.
3. German works which are to a less or greater extent branch shops of American concerns, with whom they have intimate relations as to interchange of improvements and practice.
4. German works who build under contract or under royalty American tools for the German market.
5. The importers of American built machinery. It will be readily understood that special conditions may favor one or the other as the best. The lowest cost or the maximum profit may develop along the one or the other line.

#### Elements of Cost.

One hears somewhat contradictory evidence on questions bearing on cost, and yet each may be justified by the facts. Apparently, no sweeping generalization is possible.

So far as the materials are concerned—and they play a variously important rôle—they cost more money in Germany, and it looks as though that will be an advantage usually on the side of American makers. Whether future tariff legislation in Germany will more than offset this remains to be seen.

It is, therefore, chiefly a question of labor, and on this point diametrically opposite opinions are expressed. To some extent these become reconciled when locality is taken into consideration. Such a labor market as Berlin will give very different results from those based upon conditions prevailing in Central and Southern Germany. One hears of instances in which costs on the same machine are very much lower in Germany than in the United States, and these cases are quoted to prove that the labor cost per unit of produce is lower in the former country.

Closely connected with this is the vexed question of the relative efficiency of the labor in both countries. This is aside from the influence of the unions, which in the case of the foundries seems to throw the balance toward our side. The German molders have a very strong organization, which virtually dictates to German producers the price at which each particular casting shall be made. In the machine shops such conditions do not prevail.

American engineers who have had occasion to watch the work of German labor on American tools in shops working under American systems claim that the German machinist does not turn out the same amount of work by any means. One close observer places the efficiency at only 60 per cent. of that of the American mechanic. This, it is explained, is partly a matter of management. The relations between the engineer or owner and his foreman, and between the latter and the mechanics, are very different in Germany from those prevailing with us. The conceptions of discipline in Germany would not tolerate a suggestion from a workman as to improvements or a discussion of methods and appliances. It appears that no initiative can come from such a quarter, and that the opportunities for advancement so stimulating to ambition are cut off. Conscientious work and unquestioning obedience to instructions constitute the first claims to consideration for the German mechanic.

The statement is made that there is little discrimination shown in putting labor upon machines. A finish is given to parts in which great accuracy is not imperative, and in that way work is wasted, a course possibly pursued for the sake of its moral effect upon the men.

The Germans claim that the only field in which American makers can hope long to hold a share of their market is in those standard tools, medium and small in size, in which the production of a large number simultaneously is possible, and in which there is a large market in the United States as well. By production in quantity, with a surplus for export, we may be in a position to crowd down cost to figures unattainable on the Continent. They claim that we must carry specializing to an extent which again narrows our market, because the consumer in Germany himself does a character of work which limits his use for a tool built to carry on uninterruptedly a narrow range of operation. In other words, the German buyer of machine tools cannot keep a special American tool busy steadily enough to make it pay him.

In this particular field of producing standard tools Germany is itself making great strides. Conspicuous among the firms who are manufacturing along American lines are Ludwig, Loewe & Co. of Berlin, who have a splendid plant completed within a comparatively short time, and who have established a London office to mar-

ket a part of their product in countries outside of Germany. The works are controlled by Ludwig Loewe, one of the great German capitalists in industrial undertakings, who is conspicuously associated with a large rifle making concern, a large electrical manufacturing plant and with a number of other enterprises.

Established under different auspices is the Deutsche Garvin Maschinen Gesellschaft of Berlin, a concern having close affiliations with the Garvin Machine Company, and in which German capital is principally interested. This company are building large works, which it is expected will be completed during the current year.

That competition from such sources cannot fail to make its impression is beyond a doubt. The importers, however, unite in the expression of the opinion that in spite of all the influences at work to narrow the opportunities for American makers of machine tools on the Continent, a good field will remain.

If the energy, ample capital and thorough system of the leading machinery importing firms in Germany can hold and develop the trade for American makers, it will be accomplished. The warehouses of the leading concerns, their office equipment and their business systems are models of their kind.

C. K.

### Three Failures in the Iron Trade.

James R. Floyd's Sons, a corporation engaged in business as iron founders at 539 West Twentieth street, New York; Hugh W. Adams & Co., pig iron dealers, at 15 Beekman street, New York, and the Randolph Iron Company of Brooklyn, assigned on the 20th inst. The failure of Hugh W. Adams & Co. was precipitated by that of the other two, who were unable to make payments when called upon to do so.

The first of the assignments recorded was that of the Floyds. Michael J. Drummond was named as assignee. The business was established in 1856 by Herring & Floyd, who dissolved in 1881. James R. Floyd continued alone until 1888, when two of his sons became partners. They dissolved in October, 1897, and the business was continued by three of the sons until they were succeeded by the present corporation on August 30, 1899, formed under New York laws, with a capital stock of \$50,000. Their attorneys state that the liabilities are about \$120,000 and nominal assets from \$120,000 to \$130,000. The failure was attributed to competition of other concerns outside of New York, who had cheaper rents and employed cheaper help. Notes were coming due which they could not meet and to protect all creditors they made an assignment.

Hugh W. Adams, doing business as Hugh W. Adams & Co., assigned to William G. McAdoo. Mr. Adams has been in business in New York for the past 25 years. He made an assignment on November 11, 1884, but subsequently resumed business and sold pig iron for both Northern and Southern furnace companies. The assignee says that no statement of the condition of the affairs of Adams & Co. can be made until he has carefully examined the books and until the assignees of the two other corporations which failed make a report. These examinations are now in progress.

The Randolph Iron Company, iron founders, operating one of the largest institutions of the kind in Brooklyn, and located at Dupont and Franklin streets, in the Williamsburg section, assigned to Robert L. Morrell. The cause of the failure is given as bad business. A statement issued by the assignee, after saying that all of the employees will be paid in a few days, intimates that the business is to be resumed.

**A Projected Australasian Iron Works.**—Advices from Melbourne, Australia, state that the Lal Lal district of Victoria has recently been exploited by a Melbourne syndicate and experiments with the iron ore obtained there show a high percentage of mineral. The syndicate have already secured rights to an extensive area of the district, and will immediately erect smelting works in the town of Geelong, some 40 miles from Melbourne. Experts declare the quality of the iron made from this ore to be equal to the best imported Swedish, and developments are being watched with interest. The company are to be known as the Federal Iron Works.

The Richmond Locomotive & Machine Works, Richmond, Va., will soon be operated throughout by electricity. This was formally settled recently when the contract was closed by which the Virginia Electrical & Development Company are to furnish the locomotive works with electrical heating and power. It is expected that by January the entire plant of the locomotive works will be in operation by electric power and that the last of the old engines will be out.

### The Italian Reciprocity Treaty.

WASHINGTON, D. C., July 24, 1900.—The State Department on the 19th inst. made public the President's proclamation promulgating a reciprocity treaty between the United States and Italy negotiated by Special Commissioner Kasson and Baron Fava, the Italian Ambassador at Washington. Like the German treaty and that with Portugal, made public several weeks ago, and the convention with France, concluded in 1898, the Italian treaty has been negotiated under Section 3 of the Dingley act, and therefore does not require to be ratified by Congress. After negotiation it was, however, subject to approval by the Italian Parliament, but the original draft of the treaty having been signed at Washington February 8, 1900, in the interval the Italian Government has acted upon it, and the new convention is therefore the law of the land, being the fourth treaty of this character to go into effect since the passage of the Dingley act.

The concessions made to Italy in the new treaty are necessarily limited to the articles specified in Section 3 of the Dingley act as those upon which the President may grant reduced duties, including argols (the base of cream of tartar), brandies, still wines, vermouth, paintings, statuary, &c., and, as in the case of the German treaty, the interests of the California wine growers have been potent enough to prevent the incorporation of champagne in the conventional list.

The American products which under the new treaty may be imported into Italy at reciprocity rates of duty include a very considerable list, in which the items of interest to the readers of *The Iron Age* embrace agricultural machinery and detached parts, scientific instruments, dynamo electric machines and sewing machines.

For the purpose of negotiating reciprocal trade agreements the Italian Government maintains two sets of tariffs, one known as the general tariff and the other as the conventional, or reciprocity, tariff. While these rates are identical as to many items, yet in such cases the granting of the conventional rate is considered to be a pledge of the maintenance of that rate for the period of the treaty without regard to changes that might be made in the general tariff by governmental edict or customs regulation.

Under the new treaty agricultural machinery pays a duty of 9 lire, or \$1.74, per quintal (220 pounds), this rate being identical in both general and conventional tariffs, the concession to the United States on this item amounting merely to a pledge that it shall remain in force during the life of the treaty. Detached parts of agricultural machinery composed of cast iron will pay 10 lire, or \$1.93, per quintal, while such parts of other iron or steel will pay 11 lire, or \$2.12, per quintal. These rates are the same under both general and conventional tariffs.

The reciprocity rate of duty on scientific instruments of copper, bronze, brass or steel, provided with telescopes, microscopes, disks or graduated circles, &c., is 30 lire, or \$5.79, per quintal, a very important reduction from the general tariff, which is 125 lire, or \$24.12. Scientific instruments not provided with optical devices, nor with graduated disks or circles, will also pay 30 lire, or \$5.79, per quintal, instead of 75 lire, or \$14.48, which is the general tariff. On all kinds of scientific instruments in the construction of which iron clearly predominates the conventional duty is 30 lire, or \$5.79, per quintal, which in this case is also the general tariff on this class of goods.

On dynamo electric machines the weight of which exceeds 2204 pounds the reciprocity treaty provides a rate of 16 lire, or \$3.09, per quintal, in place of the general tariff of 30 lire, or \$5.79. On dynamos weighing 2204 pounds or less the reciprocity rate is 25 lire, or \$4.83, per quintal, in place of the general tariff of 30 lire, or \$5.79. Detached parts of dynamos will pay 25 lire, or \$4.83, under the treaty, instead of 30 lire, or \$5.79, which is the general tariff.

Sewing machines, with stands, will pay the conventional rate of 25 lire, or \$4.83, per quintal, which is the same as the general tariff rate, and hand machines will pay 30 lire, or \$5.79, per quintal, which is also identical with the general tariff.

Brieny stated, therefore, American manufacturers secure reductions in the duties now paid on dynamos and scientific instruments, and a pledge that the present rates on agricultural machinery and detached parts and on sewing machines will be maintained while the treaty is in force.

Under the terms of the treaty the agreements contained therein are binding upon both powers until December 31, 1903, and thereafter for one year, "or until the time when one of the high contracting parties shall have given notice to the other of its intention to arrest the operation thereof."

W. L. C.



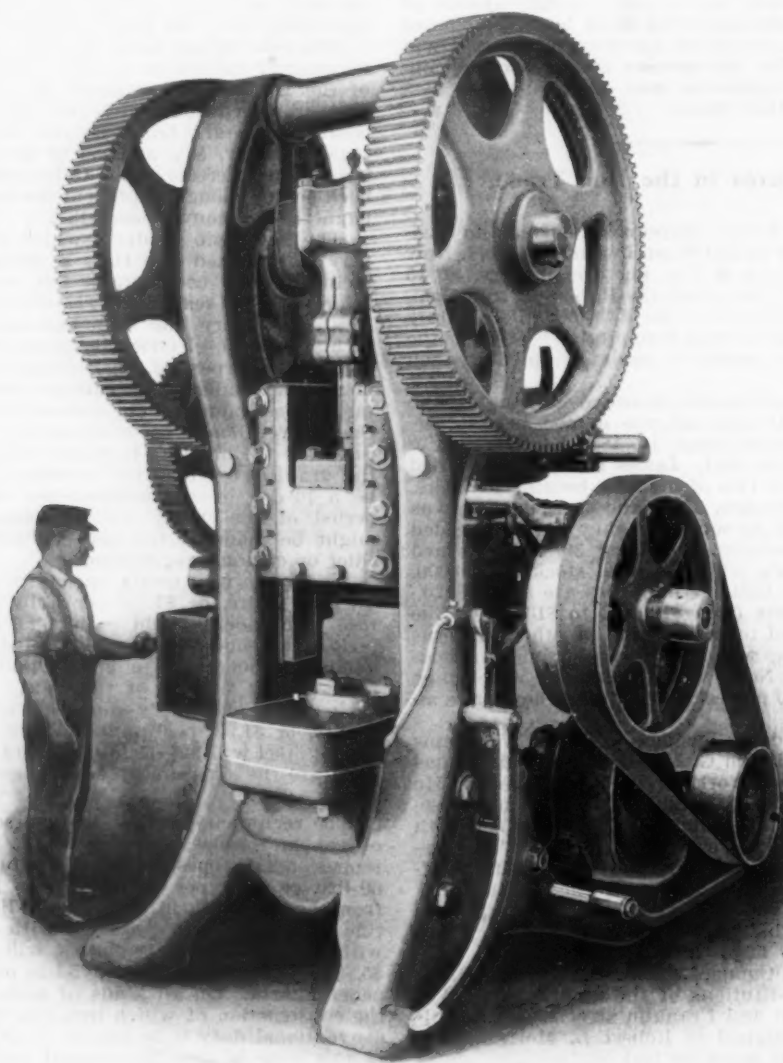
### Ferracute Press for Heavy Cartridge Drawing.

The press shown in the accompanying engraving is one recently made by the Ferracute Machine Company, Bridgeton, N. J., from the designs of Oberlin Smith, for the Navy Yard at Washington, D. C. This machine is intended for heavy cartridge case drawing, for rapid fire navy guns, and is to be supplementary to the presses shown in *The Iron Age* of May 24, 1900, which were sent to the Navy Yard last year. None of the cutting or drawing presses in this former shipment was capable of giving a ram pressure of over 84 tons, while the specifications of the present machine called for a pressure of from 200 to 250 tons. As a matter of fact the machine has been tested for 350 tons, by smashing blocks of wrought iron having an aggregate cross section of the

automatic stop clutch to one which works entirely by hand. A new feature is the balancing of the clutch lever by a sliding weight, which helps to throw the clutch in gear when in forward position, and which, when pushed back, balances the lever so that it works easily in both directions by hand. When set for hand working the treadle can be fastened out of the way by a special latch. This, however, can be released so that the machine will start by a depression of the treadle, but may be stopped by hand.

As shown, this machine is driven by a 20 horse-power, 220-volt individual motor, which is mounted upon a swinging shelf at the rear, with lifting screws for tightening the belt. The proper rheostat and throw out switch are also provided, duly mounted upon the left hand column.

As the specifications for this press called for ample belt



FERRACUTE PRESS FOR HEAVY CARTRIDGE DRAWING.

proper number of inches. Such work it did with perfect ease, and without using a belt of full width.

This press has stamped upon it the shop number 5000, it happening to be the five-thousandth press built by the company. Its total weight is about 19 tons; its height is 11 feet 6 inches; its depth and width of base on floor are 5 feet 4 inches each. The columns are of solid metal 10 x 18 inches, and the whole construction, as will be seen, is compact and massive.

The stroke of the present machine is 10 inches, but it is so arranged, by allowing ample heights, that it can be varied in future machines anywhere from 1 to 24 inches. The adjustment of the pitman is 10 inches, thus giving a very great range in regard to ram heights to suit various dies, &c. As will be seen by the pictures, the shaft is driven from both ends, by twin cut gears each 60 x 9 inches. This, of course, lessens the torsion on each end of the shaft to half the amount incurred with the usual single gear drive. The train of double gearing is so arranged as to give a ratio of 50 to 1 between the fly wheel and the main shaft, this fly wheel being 40 x 7 inches, and being arranged to drive the press by a new friction clutch which can be changed in a few moments from a strictly

power with a moderately loose belt, 6 or 7 inches wide, the gearing and fly wheel were arranged in accordance therewith, plenty of stored power in the wheels being provided for the critical moment of doing the work. The designer did not intend to be caught napping on this point, and somewhat surprised the experts inspecting the machine by reducing the 6-inch belt successively to 3, 2 and 1 inch, the latter running the machine while a pressure test of 315 tons was taking place. A further test was then made, using for a belt a piece of ordinary cotton tape  $\frac{3}{4}$ -inch wide by 0.013 inch thick. The surprising part of the performance was that such a belt should keep in continuous motion the complete heavy train of gearing, with its clutch, fly wheel, shaft, pitman and ram, but such was the case. A pressure test of 200 tons took place while the tape was putting in its work without throwing it off the pulleys.

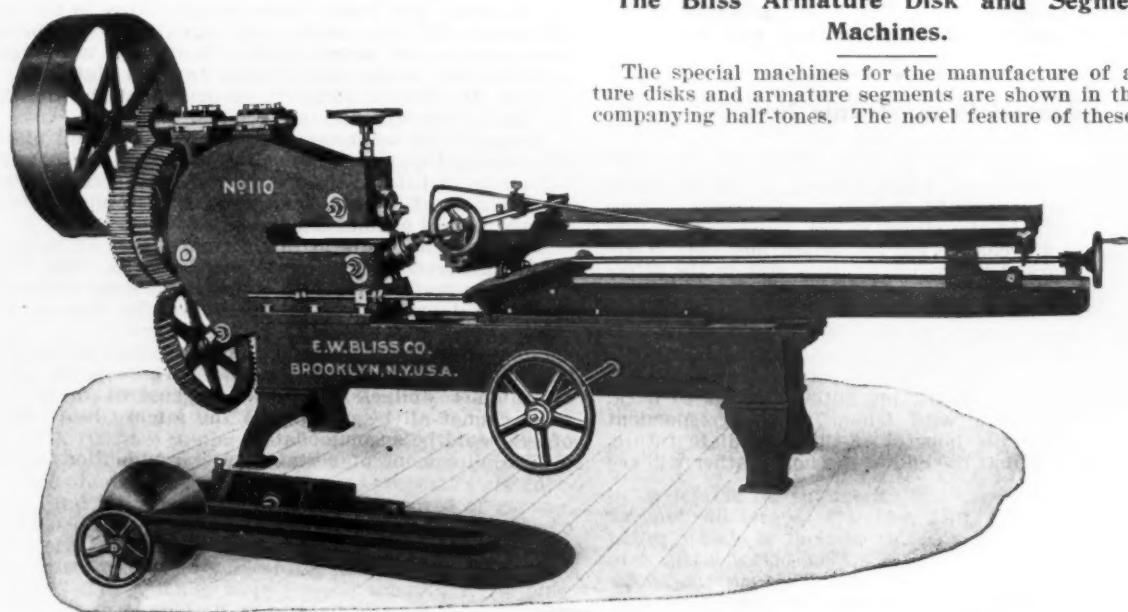
The American Steel Roofing Company, Cincinnati, announce the consolidation of the American Steel Roofing Company and the American Rolling Mill Company. The same management will be continued with the addition of

several experienced men, who are experts in their special lines. They are building a new factory at Middletown, Ohio, immediately adjoining the steel and sheet mills of the American Rolling Mill Company, and the entire

products for every requirement of their business, assuring them of the best qualities in the market and promptness in delivery.

### The Bliss Armature Disk and Segment Machines.

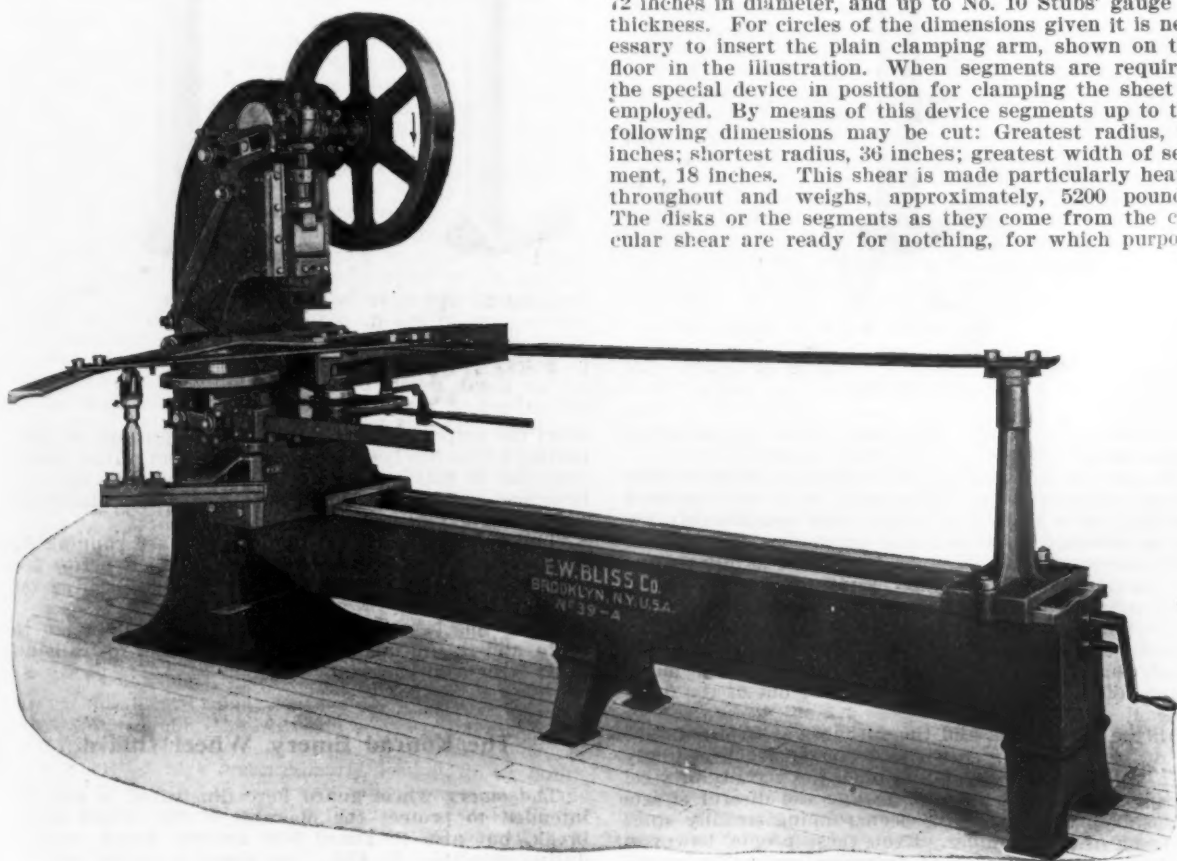
The special machines for the manufacture of armature disks and armature segments are shown in the accompanying half-tones. The novel feature of these ma-



THE BLISS DISK CUTTING SHEAR.

works when completed will form one of the most modern and best equipped plants in the country. Middletown, Ohio, is about an hour's ride from Cincinnati, with splendid railroad facilities in all directions. They will continue to manufacture all present lines, making a special-

chines is the device for making them equally well adapted for cutting and notching the segments used in the construction of the largest generators, as well as for the disks of smaller diameters. The circular or circle cutting shear, Fig. 1, is adapted for cutting both the inside and outside of circles or rings of from 14 inches to 72 inches in diameter, and up to No. 10 Stubs' gauge in thickness. For circles of the dimensions given it is necessary to insert the plain clamping arm, shown on the floor in the illustration. When segments are required the special device in position for clamping the sheet is employed. By means of this device segments up to the following dimensions may be cut: Greatest radius, 96 inches; shortest radius, 36 inches; greatest width of segment, 18 inches. This shear is made particularly heavy throughout and weighs, approximately, 5200 pounds. The disks or the segments as they come from the circular shear are ready for notching, for which purpose



THE BLISS DISK NOTCHING PRESS.

of heavy corrugated and flat sheets of extra widths and lengths, and will also furnish all their standard brands of roofing, polygon pipe and other styles of conductor pipe and eaves trough. They will thus be in better position to furnish their customers with a full line of

the notching press, Fig. 2, was designed. As illustrated this press is adapted for notching segments of the same radius as the shear. When the segment has been notched the press will automatically stop. To notch complete disks of from 4 to 60 inches in diameter it is only nec-



essary to remove the special holder and place in its position the regular clamping arm (not shown) that is supplied with the press. The weight of this press is about 3900 pounds.

These two machines have recently been built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., for a large manufacturer of dynamos and motors in England.

### Central Pennsylvania News.

HARRISBURG, PA., July 23, 1900.—The clouds are not so lowering as they were a few weeks ago and conditions have improved materially in several directions. Those who talk freely of the situation say unreservedly that there has been a change for the better, and that, while it is not a marked improvement, it is still in the direction of better things. There is not that hesitation which has been the chief characteristic of the market during the last three months. Buyers of iron and steel and their products are placing orders, and while there is no occasion to enthuse over what is only a natural revival from unnatural conditions, the outlook is not so dark. Some manufacturers with whom your correspondent has talked feel quite hopeful of the immediate future, and they believe that the end of the hot weather will see

Hudson River Railroad was shipped. Until further notice the Bessemer, rail and No. 1 blooming mills and other departments will close down Saturday morning for the purpose of giving the men a longer respite each week. Considering the weather conditions the output for the week was large. There is no change in the conditions at the frog, switch and signal, and the bridge and construction departments. Both are excessively crowded with orders and running day and night.

John W. Brown, formerly proprietor of the foundry on East State street, this city, died last week.

Tests of the machinery of the new pipe mill of the Harrisburg Pipe & Pipe Bending Company are now being made, and it is expected that active operations will be commenced within ten days. The company have already placed a number of orders.

Some of the plants in this section report an increase of foreign trade. The Harrisburg Boiler & Mfg. Company have just completed a shipment of large boilers to Brazil, and orders have been booked for Europe and South Africa.

Most of the plants here and in this immediate vicinity are running more or less regularly. There is the usual midsummer dullness, but the suspensions in several mills cannot all be charged to the intense heat. More orders could be accommodated.

The agreement of certain large combinations to re-



Fig. 1.



Fig. 2



Fig. 3.

### THE KONRAD EMERY WHEEL GUARD.

the practical end of the uncertainty that has caused a decline in an otherwise satisfactory market.

During the last ten days the heat has been so intense and so continuous that many mills were not operated steadily. As a result the output was considerably below the average. It is said that employees of industrial plants never suffered so much from heat as during the last ten days. During the remainder of the hot period the management of the several local plants will endeavor to give the men as much relief as possible by decreasing the hours. There has been no talk yet of a cut of wages, but should the decline continue the maintenance of the prevailing wages will be out of the question.

All the coke ovens and the furnaces at Orbisonia are out of blast and the town is reported as exceedingly quiet. Other towns depending upon the activity of steel and iron plants are likewise feeling the direful effects of closing plants that have been running steadily since the boom of last summer. Even these people, however, are hopeful. Employees of furnaces and other works in which great heat is inseparable from the daily toll are only too glad for a respite, enforced or otherwise. They would just as soon rest during this climax of heat.

President E. C. Felton spent two days at the Pennsylvania Steel Works last week inspecting the improvements and consulting with the heads of departments. Much headway has been made on the new additions to the plant, and the structural work for the new engine house is completed and ready for erection. Friday another of the great girders for the New York Central &

strict the output in certain lines for the purpose of maintaining prices has been a boon to a number of the smaller concerns in this territory. They are outside the combinations and are able to close contracts for comfortable orders at good margins.

The South Harrisburg Chain Works are running five days a week, and the management report a better feeling throughout the trade and a more encouraging outlook.

There has been a revival of railroad building in the State, and this means an improved demand for rails and other structural material.

### The Konrad Emery Wheel Guard.

The emery wheel guard here illustrated is not only intended to protect the operator if the wheel should break, but also to guard him against flying particles during grinding. In Fig. 1 the guard is shown with the automatic slide up. The slightest break in the wheel will instantly throw the slide forward, as indicated in Fig. 2, and effectually protect the operator. The device can be tilted back, Fig. 3, or raised out of the way for changing wheels or accommodating larger ones. As the wheel is reduced in size the guard can be adjusted so as to always be within  $\frac{1}{4}$  inch of its face. The guard is made of malleable iron of ample strength to perform its duty. It is manufactured by the Konrad Emery Wheel Guard Company of Oshkosh, Wis.

### Lake Ore Matters.

DULUTH, MINN., July 22, 1900.—The June movement of ore is continuing fairly well. The superintendent of the Sault Canal, talking to your correspondent the past week, said that July's total tonnage would probably exceed that of any month in the history of the canals, this being partly due to the larger movement westward of coal. It is likely that August 1 will see a total of about 8,800,000 gross tons of ore off upper lake docks. There is some slackening of shipments all around.

By deals that have been in progress for a long time with a number of Michigan lumbermen, owners of iron bearing lands on the Western Mesaba, and the last of which has just been settled, the Lake Superior Consolidated Iron Mines have agreed on a minimum output annually of 700,000 tons and at a royalty of 25 cents throughout their old agreement being for a far smaller minimum but 30 cents royalty. There is a 300,000-ton minimum on the Alworth, Hull and Boeing lands, which include the Hull and Sellers mines, the Hibbing town-site exploration and one 40 in 31, 58-17, near the Adams mine. There is a 200,000-ton minimum on the Burrows, Rust and Goff lands, including the Rust mine and lands in sections 1, 2 and 12, 57-21, and in 35, 58-21. There is also a 200,000-ton minimum on Burt lands, including the Burt mine and about 1200 acres on the formation in 58-20. The ore deposits on these various properties are enormous, and these lumbermen are now assured of getting, under a contract with one of the strongest concerns in the world, an annual income of not less than \$175,000, and possibly far more, according to the state of the ore market. These lands were bought solely for the pine, which has been sold off at a profit, so that this magnificent return is simply an extra and—before the discovery of ore thereon—an unexpected and entirely unearned increment. The Consolidated company have other properties, lease and fee, in the neighborhood of Hibbing. The Consolidated company have for years been striving to reduce the royalty rates of 30 and 35 cents on these lands mentioned, and the outcome is a settlement evidently agreeable to all parties. Local newspaper comment has shown a very erroneous conception of the situation.

There is no such change in the attitude of large concerns exploring and developing the Mesaba range as some would have us believe. Speculators who have been at work are finding changed conditions seriously affecting their chances of profit, and they are dropping out of the explorations, but the leading mining and consuming interests are carrying forward the same policy as for the past year. It has been reported in Duluth that Mesaba Bessemer ore has been offered on Lake Erie docks at \$3 and has been refused, but I cannot verify this, and it is probably untrue.

A find of high grade Bessemer ore is said to have been made on the west half of the northeast quarter of section 28, 58-20, on land belonging to John R. Mitchell of Winona. The extent of the ore body is not known, but the discovery is half way between the Clark mine on one side and the new Monroe on the other, and the land joins both. It is the center of the enormous 58-20 discoveries. The Rouchelleau exploration, examined four years ago by the Consolidated Mines under an option for a purchase at \$1,250,000, has now been gathered in by them, at a total price of about \$950,000, including the \$125,000 they then lost by the option. This property lies directly east of the Minnewas and south of the Ohio, Virginia and Shaw, and contains 20,000,000 tons, part of which can be mined by open pit shoveling. The price is for the fee, so that the ore is calculated on the basis of 5 cents a ton in the ground. Included in the purchase is an 80-acre tract between the Malta mine and the Minnesota Iron Company's Elba lands.

Explorations continue as of late on the Vermillion range, the only change of which I know being a new drill for the Mahoning Ore & Steel Company in the south half of the northeast quarter of 35, 63-13. Shipments off the Vermillion are about as they have been.

On the Gogebic the Oliver Company have reduced their force at Norrie about 10 per cent. At one Norrie stock pile 150 cars were recently loaded in 10 hours. The American Steel & Wire Company have at last made virtual announcement of the purchase of Atlantic, of which I hinted last December, by putting one of their superintendents in charge and letting the facts come out. The mine was bought at that time for \$500,000, and was considered an excellent purchase, especially since the new shaft found a large deposit. Superintendent Shepard, formerly of Cuff, is in charge and has brought an additional mining force from Iron Mountain. The mine should increase over 100,000 tons from last year. Iron Belt, that was figured at about 100,000 tons for the season, is coming together and will not do much more than half that.

At Crystal Falls, Lamont (Corrigan, McKinney & Co.)

has come together, and the single shaft is in such shape that all work is suspended until a new shaft can be sunk and the mine reopened. Former operators mined too close to the shaft, which was in ore, and the pillars were not heavy enough to support the weight. Bristol, old Claire, has closed down in part, though development will continue. It has a large deposit and will have a market at some future time. Oglebay, Norton & Co., who have Bristol, have taken Beaufort, Marquette range, which was under option to Cleveland Cliffs, and will reopen it. The Milwaukee Company's line into Crystal Falls has been surveyed and the road and mine branches are rapidly being put down.

The first 50-ton ore cars for the Algoma Central Road's Helen mine branch have been received and shipments began last week. Your correspondent was present at the beginning of active operations at dock and mine. The company are now to ship to Midland and Hamilton, and later to some American port, having made sales on this side the tariff line. They are in position to compete, with their short haul and easily mined hard ore carrying so slight a fixed charge for purchase or development. This company have bought and are receiving a large consignment of 50-ton cars, the economy of which, for their line, may possibly be doubted.

The Oliver Iron Mining (Carnegie) Company are stock piling at their Oliver mine, Mesaba range, a very large quantity of low grade ore, too good to throw away and not available for shipment. They now have six piles of the ore, all large. The fact brings out an interesting point, which is this: If this company, operating their own furnaces and having ores of all classes in their own mines, are unable to pay the royalty on low grade Mesaba ores, what will the independent miner do who has such ores for sale? There are vaster quantities of this ore on the Mesaba than had been believed possible, and its discovery is proceeding right along. Almost every mining concern has it, and its separation from shipable ore is a matter of importance. Nearer the furnaces this ore might be successfully utilized, but with freights as now it is idle to talk of its consumption. As I have already stated, the question of Mesaba ore values is more and more a matter of quality, quantity being far less of a criterion of value than a few years ago. Mining companies recognize this now in both purchases and leases, in the former by price and in the latter by a differential in royalty based on analysis.

The largest cargo ever carried by a lake steamship was taken last week by the "John W. Gates," 7267 gross or 8139 net tons. The "Hill," of the same fleet, carried 7147 gross tons. These are 100 tons less than was carried by the Bessemer (Rockefeller) tow barge "Smeaton."

### The 50-ton Pressed Steel Cars.

Upper Lake Superior iron ore railways are experimenting with the pressed steel cars, and their work is watched with considerable interest. Owing to the peculiar conditions surrounding the hauling of ore from mines to Lake Superior, these cars will be subjected to tests there that are wanting elsewhere, and they will act on roadbeds in an exaggerated way.

By reason of spacings of both ore ships and docks, cars for the trade must be but 24 feet centers, and must be no wider than standard, thus putting the center of gravity for the additional load carried by the 50-ton cars quite high. In general these ore roads have heavy grades with traffic, and sharp curves. The effect of a car itself weighing 15 tons and carrying 50 tons more, all on a wheel base of less than 19 feet, traveling at speed on such grades and around such curves, is somewhat of a problem. So concentrated is the load of these cars, 5000 pounds to the lineal foot of track, that running for distances over swamps and deep, soft "muskegs," they will quickly find weak places other classes of traffic would never discover. At mine spurs conditions frequently necessitate sharp curves and heavy grades.

Because of the road gradients, ranging from 1½ to 3½ per cent. against traffic, there must be high braking power, and as the arc of the wheel the brake shoe can embrace is no greater than in 25-ton cars, the grip must be tighter, introducing questions for car and track maintenance.

So far there have been very few wrecks in the ore regions in which steel cars have figured, but where they have the result has been most satisfactory. A few days ago an ore train coming down to Duluth was wrecked. It contained 10 steel cars and some 30 wood hoppers of 25 to 30 gross tons. These latter were smashed to pieces, while the steel cars were repaired without difficulty at the road's ordinary shops. Still most of the experimenters are pulling a few steel cars on the rear of their trains. Some difficulty has been experienced in dumping them when filled with the soft hematites that form so large a portion of the Lake Superior mineral operation. This, of course, is easily remedied whenever it comes up.

The ore roads are short, loads being rarely hauled



more than 75 to 100 miles, and in some cases but 12 to 15. The value of the heavy car on the shorter hauls would seem almost questionable. But the first lake road to use them was the Lake Superior & Ishpeming, which has a very short haul, and whose experience is said to be very favorable. Certainly from the 8-ton car of a few years ago to the 50-ton car now there must be many problems and interesting departures.

#### Lake Copper Notes.

The Arcadian Copper Company will sink a shaft into the Mesnard epidote, where they have been testing lately. It will be a three-compartment shaft. Quincy is sinking into the Mesnard portion of the mine, and will go 4000 feet, connecting there with the North Quincy. The work will consume several years.

Calumet & Hecla are to erect a sand wheel 60 feet in diameter and 6 feet face, to handle about 2750 tons of stamp sand and 3,000,000 gallons of water every day. It will care for sand and water from eight stamps now going in.

The sand concentrating device on the Franklin waste has concentrated to a value of 55 per cent. copper, and will be enlarged and introduced elsewhere. It looks like a big thing.

### Canadian News.

#### Power Works and Steel Plant.

On the 18th inst. the first sod of the Hamilton and Lake Erie power canal was turned with some ceremony at Silverdale. A number of people were present. E. A. C. Pew, the promoter of the canal company, gave an account of the inception of the idea and of the plans. Before starting the canal, he said, it was necessary to obtain a market for the power. It was partly to contribute to this purpose, he explained, that he organized the Canadian Steel Company, with a capital of \$18,000,000, to locate at Welland. An act of Parliament was passed, authorizing the steel company to guarantee the bonds of the power company. The steel company have undertaken to do so, and to contract for 15,000 electric horse-power, which is to be supplied at the annual rate of \$20 per horse-power. The source of the water is Welland River. That stream flows into the Niagara, and the waters of the latter river are more or less forced up the channel of the Welland, owing to their great force and to the deflection at that point. A power canal is to tap the Welland River at a point in this overcharged section of its channel, into which canal there will be a constant rush of water. The canal, which will be a work of mere earth cutting, will run 6½ miles to Jordan River, otherwise known as the Twenty-Mile Creek, a dwindled stream which enters Lake Ontario 20 miles from the mouth of the Niagara River. In the course of the rocky channel of the Jordan are two or three falls, the highest of them being at Jordan village, where there is an abrupt fall of 100 feet. The total fall that can be utilized for producing power has been ascertained to be about 250 feet. Mr. Pew says the canal will be completed at nearly the same time as the Welland Steel Works, which he states will be about September, 1901. Power, he promises, will be transmitted to Toronto and Hamilton at about half steam rates. The installation plant is to develop 25,000 horse-power, which can be increased to 50,000 or 60,000, as required. Plans of the canal show that it is to be 150 feet wide at the top, 60 at the bottom, 12 feet deep, with a current of 3½ miles an hour. It is estimated that it will cost \$1,000,000 to construct. Figures indicating the cost at which the electrical machinery can be obtained have been received, Mr. Pew says, from the Stanley Company, at Pittsfield, Mass.; the Royal Electric Company of Montreal, and others. Mr. Pew is the man who conceived the idea of the Toronto, Hamilton & Buffalo Railway and promoted it with such success.

#### Dr. Coleman's Explorations.

Dr. Coleman, who has just returned from the Lake Superior district, where he was making investigations for the Ontario Bureau of Mines, now leaves Toronto for Europe. He will attend the World's Congress of Geologists at Paris. After putting in some time with an exploration party in the north of France, and in Switzerland, he will go to England to attend the British Association meeting. At this meeting he will read two papers—one dealing with the glacial drift phenomena in the vicinity of Toronto; the other with the occurrence of jasper bands in Northern Ontario, Michigan, Wisconsin and Minnesota. He was engaged in examining these bands while away on the tour from which he has just returned. In Ontario he has reason to believe the bands extend from Batchawana Bay to Lake Temescanage. He found jasper to occur in two parallel bands at a num-

ber of points. The chief interest in locating these bands lies in the relation they bear to iron ore deposits. It is believed that the tracing of them will prove of great assistance to prospectors for iron ore. Dr. Coleman is satisfied that there is ore at several points along the line of his explorations. He made a short visit to the Michipicoton mining division, where he noted progress at the Helen mine. He says there has been much development at that point since he was there last year. Numerous drill borings have been made, and one level has been driven into the body for a distance of nearly 300 feet, proving its length in one direction to be about 1000 feet. The depth, as shown by the boring, is about 300 feet, and Dr. Coleman has no hesitation in saying that the quantity of ore is to be measured by millions of tons. The average of all the borings, he says, shows it to contain 64 per cent. of iron, and it is remarkably free from impurities. During his first visit to the mine, the first lot of ore, containing three carloads, was sent down to Michipicoton harbor, and the first boat load for the Midland smelter should be delivered now.

#### Electric Interests Unite.

The Royal Electric Company, Montreal, manufacturers of electrical machinery and supplies, light, power, &c., have contracted with the Chambly Mfg. Company for all the power produced by the latter during the next 50 years. At the end of the 50 years the plant used for the distribution of this power is to be handed over to the Chambly Company in good condition. The Chambly Company are to erect a building for the generation of power and a sub-station in Montreal. All the Chambly contracts are taken over by the Royal. The Royal will pay the Chambly \$15 per annum per horse-power for the first 15,350 horse-power, and \$10 per horse-power for all in excess of that amount. It is calculated that the loss in transmission will be 12 per cent. Senator Forget is president of both companies.

In the year ending May 31 last the net profits of the Royal Electric Company amounted to \$556,692, as against \$267,684 for the previous year. They have just sold their holdings of Chambly Company bonds, realizing on them a profit of \$371,000.

#### Minor Notes.

A settlement of the dispute between the molders' union and the iron founders of Montreal has been arrived at, the result being an advance in wages of 15 cents per day.

From the Wilbur mines on the Kingston & Pembroke Railway large quantities of iron ore are being taken. A spur line is to be run to the mines. For this purpose the Dominion Parliament has voted \$38,000 as a subsidy to the railway.

The Montreal Automobile Company, with a capital of \$250,000, have applied for a charter of incorporation.

According to the *Marmora Herald*, the Hamilton smelter is no longer using ores from the Marmora mines.

A quantity of machinery, valued at \$40,000, has been received for the construction of the Quebec bridge.

A number of the Montreal striking boiler makers have gone to the United States to seek employment.

Since Dr. Haefner's return from Germany things have not gone on quite smoothly between him and the Haefner Refining Company, of which he is managing director. The differences have finally got into the courts.

Upon the advice of English brokers, the promoters of the steel works at North Sydney have decided to postpone the floating of the stock until the state of the London mining market improved. But the development of the coal areas purchased from the General Mining Association will at once be proceeded with. C. A. C. J.

The council of the Iron and Steel Institute of Great Britain, at their meeting held this month, appointed as successor to Sir William Roberts-Austen William Whitwell of Stockton-on-Tees. The new president-elect has been a member of the council of the Iron and Steel Institute for many years, and, since the election of Sir David Dale, Bart., to the office of president some five years ago, Mr. Whitwell has held the office of treasurer. He is head of the company who own the Thornaby Iron Works, consisting of blast furnaces and rolling mills, at South Stockton-on-Tees, and no man is better known or more generally respected in the Cleveland district.

The Wright & Colton Wire Cloth Company, Worcester, Mass., are fitting up for wire drawing one of the buildings at their wire mills at Palmer, Mass., which has been used as a storehouse. A number of new machines will be placed in position and more operatives will be added to the present working force. Still greater additions to the present wire plant are contemplated.

# OBITUARY.

JASPER R. RAND.

Jasper Raymond Rand of Montclair, N. J., died from heart disease on July 18 at his home, at the age of 63 years. Mr. Rand was born at Westfield, Mass., in 1837, of a family dating its American ancestry from 1635, and including two colonial governors, and which was well represented in the Revolutionary War. He obtained his education in the public schools and academy of his native town and in Fairfax, Vt. His earliest business connection was with his father, who was a manufacturer of whips when Westfield was the headquarters of that industry. In 1865 his father retired from business, and Mr. Rand and his younger brother, Addison C. Rand, succeeded him. In 1870 he removed to New York, and was for a time associated with another brother, Albert T. Rand, president of the Lafin & Rand Powder Company. In 1872 Addison C. Rand began the manufacture of the Rand rock drills and other mining machinery, and the two brothers subsequently organized the Rand Drill Company, with A. C. as president and J. R. as treasurer, which arrangement continued until the death of A. C. Rand in March, leaving the chief office vacant, when J.



JASPER R. RAND.

R. Rand was elected to the position. In 1873 Mr. Rand removed his residence to Montclair, N. J., where he had ever been prominent in local affairs. He was one of the organizers of the Bank of Montclair, of which he was continuously the president. He was a member of the New England Society, the Hardware Club and Engineers' Club of New York City, and for 40 years a member of the Mt. Moriah Masonic Lodge of Westfield, Mass. He was practically acquainted with every field of business life from that of traveling salesman up. He had a remarkable fund of wit and of pointed but stingless repartee, which made him the most delightful of companions, qualities which naturally brought him friends without limit. These and other qualities also made him a presiding officer, under whose gavel it was a delight to sit. He was interested in all public enterprises, and contributed generously to their support. He leaves a widow, a daughter and a son, the latter now representing the Rand Drill Company in Paris.

JOHN H. RICKETSON.

The death of John H. Ricketson, one of Pittsburgh's leading manufacturers and one of the city's most public spirited men, occurred on the 20th inst. from heart disease, at Nonquitt, Mass., at which point Mr. Ricketson had been staying with his family for the past month. Although he had been in poor health for the past four years, it was not suspected that the end was so near.

Mr. Ricketson was identified with many Pittsburgh enterprises. His most important business connection

was with the A. Garrison Foundry Company, of which he was president, and to the building up of which the best years of his life were given. John Howland Ricketson was born at New Bedford, Mass., on September 21, 1837. His parents on both sides were members of old New England families. He graduated at Harvard College in 1859 and for a time studied law in Boston. He removed to Pittsburgh in 1860 and there completed the study of law. The period during which he was a practicing lawyer was brief. In 1862 he married Miss Clementine Garrison and soon thereafter became associated with his father-in-law, Abram Garrison, in the foundry business which the Garrison family had established in 1806. About 1890 the firm were incorporated as the A. Garrison Foundry Company. Abram Garrison was their first president. Mr. Ricketson became president upon Mr. Garrison's death in 1894, at the age of 90 years, but because of Mr. Garrison's advanced age Mr. Ricketson had really been the active head of the firm for half a dozen years or longer before this. Mr. Ricketson was president of the Tenth Street Bridge Company at the time the property was acquired by the city, and was a director of the Sixth Street Bridge Company at the time of his death. He was a director of the Bank of Pittsburgh and vice-president of the Safe Deposit & Trust Company. Many other public enterprises had enlisted his sympathy and interest during his active career. Mr. Ricketson was a man of wide literary attainments and enjoyed considerable fame as an orator. One of his speeches, which is well remembered by leading Pittsburghers, was delivered on the occasion of a visit to Pittsburgh by Gen. U. S. Grant, shortly after his famous trip around the world. The reception to Grant took place at the old Exposition Grounds in Allegheny. Mr. Ricketson was a charter member of the Duquesne Club, and was the president of the club for a considerable period during the earlier years of its existence. He took an active interest in its affairs down almost to the time of his death. He was also a member of the Pittsburgh Club, the University Club of Pittsburgh and the University Club of New York. He was a member of St. Andrew's Protestant Episcopal Church and for several years held the office of vestryman. The deceased manufacturer is survived by his wife, two daughters and two sons, Oliver E. and John H., Jr.

RUFUS M. STIVERS.

Rufus M. Stivers, vice-president of the National Carriage Builders' Association of America, died on the 19th inst. at his home, Williamsburg, N. Y., of injuries he received a week before by being struck by a cable car. Mr. Stivers was born at Greenwich, Conn., in 1822. He was the son of a blacksmith and wheelwright, and in early life learned the trade. He became a carriage maker, and in 1855, when he came to New York, he established the present large carriage plant in East Thirty-first street, in this city. He belonged to a number of Masonic bodies, as well as the Union League Club of Manhattan. He is survived by a wife and three sons.

JOHN ABENDROTH.

John Abendroth, formerly a member of the firm of Abendroth Brothers of New York, died on July 22 at White Plains, N. Y., in his seventy-sixth year. He was born in Germany and came to this country when a young man. With his brothers, William P. and Augustus Abendroth, he formed the firm of Abendroth Brothers for the manufacture of boilers, cast iron pipe, &c., at Port Chester, N. Y. He withdrew from that firm in 1874 on account of failing health. Mr. Abendroth was at one time the senior member of the firm of Abendroth & Root, manufacturers of riveted pipe and tubular boilers, with works in Jersey City, N. J., and offices in New York City, but he retired from the business several years ago. He leaves a widow, two sons and a daughter. The funeral services were held at White Plains on Tuesday and interment was made at Rye, N. Y.

COL. W. M. GROSVENOR.

Col. William Mason Grosvenor, a writer on financial and industrial topics, and for many years an editorial writer for the New York Tribune, died at his home, Englewood, N. J., on the 20th inst. He was a cousin of Gen. Charles H. Grosvenor of Ohio. In debate he was an enemy to be feared because of his wonderful stock of statistics ever ready to his tongue. Colonel Grosvenor was born in Ashfield, Mass., April 24, 1835, being a son of a Congregational minister. He entered Yale College, but left after three years, when only 19 years old, to become editor of the New Haven Palladium. This position he filled until the breaking out of the Civil War, when he went to the front as adjutant of the Thirteenth Connecticut Volunteer Infantry, and was promoted to a captaincy almost as soon as the regiment reached the seat of war. At New Orleans he was instrumental in raising the Second Louisiana Regiment, Native Guards



(colored troops), of which he became colonel, and he led that command until peace was restored. Upon being mustered out he became editor of the *New Haven Journal and Courier* for a brief period, and in 1866 went to Missouri, where he became editor of the *St. Louis Democrat*. While acting in this capacity he wrote a powerful argument for free trade, entitled "Does Protection Protect?" The book had an extended circulation, but the author himself became a convert to the doctrine he had denounced and remained a strong protectionist until the time of his death, and said, with a smile, that the perusal of his own writings had brought about his change of heart. He came East to join the *Tribune* staff in 1875 and took up his residence in Englewood, where he had since remained and took a great interest in civic affairs. He wrote the financial review for *Dun's Mercantile Agency* and furnished a quantity of matter for it on the night before he died, although his illness had prevented him from coming to the city for several months. He leaves a wife and a son, Dr. W. M. Grosvenor of Hoboken.

WILLIAM McADAM.

William McAdam, for 40 years a manufacturer of steam boilers in Brooklyn, N. Y., died suddenly of heart disease at Allenville, N. Y., on July 22, aged 70 years. He was born in Ireland and came to this country when 22 years of age.

E. A. YERKES.

E. A. Yerkes, connected with the firm of Anderson, DuPuy & Co., Pittsburgh Steel Works, at McKees Rocks, Pittsburgh, died at his residence in Crafton, Pa., last week. He was born in Delaware, and at an early age served an apprenticeship in a branch of the metal trades, and in later life gave his entire attention to the development of the machine manufacture of hammers, sledges and edge tools. He acquired a national reputation in this line. For many years he was a member of the firm of Yerkes & Plumb, at Philadelphia, but for the past few years had been connected with Anderson, DuPuy & Co., having charge of their tool department.

WINTHROP THAYER.

On the 18th inst. Winthrop Thayer died at his home in Boston. He had been confined to the house for a few days by an attack of typhoid fever, from which developed pneumonia. The excessive heat of the day acting on his weak condition caused his death. Mr. Thayer was born in Boston, November 23, 1863. He was widely known among engineers through his trade connections and his ability in engineering lines, especially in the branch of steam generation. When 18 years of age he entered the Boston office of the Babcock & Wilcox Company. Soon after his acquaintance with the business he was made manager of the Boston office, which position he retained until five years ago. He came to the New York office of the company and remained there a year. He was one of the principal organizers of the firm of Thayer & Co., Incorporated. Together with his brothers Frank and Rodney he made a great success of the new undertaking and to-day the firm are well known as the sales agents of the Cahall water tube boilers and the product of the Aultman & Taylor Company of Mansfield, Ohio. At the time of his death Mr. Thayer was in charge of the Boston office of the firm. He was a member of the American Society of Mechanical Engineers, the Engineers' Club of New York, the New England Cotton Manufacturers' Association and the Manhattan Club of New York. He was vice-commodore of the Hull (Mass.) Yacht Club, and an active member of the Boston Athletic Association and the Algonquin Club of Boston. He was active in Masonic circles and also a member of the Exchange Club of Boston and the Newton Club of the same city. A widow survives him.

A dispatch from Ottawa, Ont., says that in voting a subsidy of \$230,000 for the reconstruction of the Victoria Bridge of the Grand Trunk Railway over the St. Lawrence River at Montreal, Sir Wilfrid Laurier said that the entire cost would be \$2,131,000. There was 45,000,000 pounds of steel used in the superstructure, and of this amount 35,000,000 pounds were imported from the United States, as it could not be obtained in Canada. The customs duty paid to Canada was \$227,000.

The plan to form a combination of the independent coke producers of the Connellsville region, which was being promoted by John Jamison, has been abandoned. A number of options were secured on important plants, but on account of the condition of the iron market and the falling prices for coke the scheme has been dropped for the present.

White & Gibson, Maryville, Mo., are in the market for a 10-ton new or second hand roller and a No. 3 Gates stone crusher, with a capacity of 125 yards per day.

## Western Bar Iron Mills on Strike.

It will be recalled that some time since we stated that a vote was being taken among the lodges of the Amalgamated Association to decide whether the wage conference committee should be given discretionary power to change the scale, as formulated at the annual convention in Indianapolis. This scale makes the minimum \$5.50 a ton for boiling on a 1 5-10 cent bar iron card, and when the average price of bars is 1 6-10 cents the boiling rate would be \$5.75, while at 1 7-10 cents the rate would be \$6 a ton, while for each advance of 1-10 cent afterward boiling advances 12½ cents per ton.

This scale was presented to the manufacturers at a conference held in Detroit shortly after the Amalgamated Association convention adjourned. The Republic Iron & Steel Company and the American Steel Hoop Company, owning nearly all the bar mills in the Central West and South, were represented by James H. Nutt, Labor Commissioner. Officials of these two companies were also present and the new scale was gone over carefully, and the manufacturers stated that in view of the rapidly falling market on iron and steel products it would be absolutely impossible to grant any advance in wages at this time.

The wage committee representing the Amalgamated Association did not have power to change the scale, and the conference adjourned for the purpose of taking a vote to determine whether this power would be given to the committee. The Amalgamated lodges have decided not to extend this power, and the result is that a strike exists to-day in the bar iron mills in the West and South that are governed by the Amalgamated Association scale. In fact, the manufacturers refused twice to accept the scale presented by the Amalgamated Association, the first time at the preliminary conference held in Indianapolis before the Amalgamated Association adjourned, and the second time at the regular conference in Detroit.

There is no doubt that the Amalgamated Association have made a serious mistake in insisting that the scale adopted at Indianapolis be signed by the manufacturers. It is absurd for the men to ask an advance at this time, when bar iron is selling very close to the lowest price it ever reached. It is a fact known to the trade that a good deal of tonnage in steel bars has recently been placed, but at very low prices. Some of the contracts were taken at 1.10c. at mill, but others went at lower prices. The new scale of the Amalgamated Association is based on bar iron at a minimum of 1.50c. It is selling now at \$5 a ton or more under that price.

At this time there is no prospect of another conference being held, and it is therefore likely that the bar iron mills will remain idle for some time. An order has been issued by the Republic Iron & Steel Company, notifying all employees at 12 of their plants, located in Ohio, in the South and in the gas belt district of Indiana, that their services have been dispensed with and that they are at liberty to seek employment elsewhere. If a call should be issued for another conference it must be for the purpose of modifying the Indianapolis scale. Any independent mills that signed the Amalgamated scale and operate their puddling departments will have to pay from July 1 \$6.12½ a ton for boiling, this being the rate decided upon at a recent conference between officials of the Amalgamated Association and James H. Nutt for the manufacturers. Very few puddling mills, however, either independent or otherwise, will be operated for some little time.

## The Crucible Steel Company of America.

The Executive Committee of seven of the Crucible Steel Company of America was selected last week at a meeting of the board of directors. Wm. G. Park of the Park Steel Company is chairman of this committee, with the following additional members: C. H. Halcomb, president of Sanderson Brothers Steel Company of Syracuse, N. Y.; James W. Brown, chairman of Howe, Brown & Co., Limited, Pittsburgh, Pa.; Reuben Miller, president of the Crescent Steel Company of Pittsburgh; Robert E. Jennings of Spauldings & Jennings Company, Jersey City, N. J.; Benjamin Atha of the Benjamin Atha & Illingworth Company, Harrison, N. J., and Herbert Du Puy of Anderson, Du Puy & Co., Pittsburgh. Members of this committee are also members of the board of directors and will have charge of the executive affairs of the company. The officials elected are Wm. G. Park, chairman; C. H. Halcomb, president; Reuben Miller, treasurer, and Frank B. Smith, secretary.

One of the largest girders ever turned out at the Pennsylvania Steel Company's Works, at Steelton, Pa., was shipped last week for a bridge at Rochester, N. Y. The girder was 81 feet long and 15 feet high, and three gondola cars were required for its transportation.

# The Iron Age

New York, Thursday, July 26, 1900.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

The Index of the contents of Volume LXV of *The Iron Age*, for the first half of 1900, is now in print. Subscribers may obtain a copy by addressing the David Williams Company, at 232-238 William street, New York, or by application at the offices of *The Iron Age* at the Forrest Building, Philadelphia, Pa.; the Mason Building, Boston, Mass.; the Hamilton Building, Pittsburgh, Pa.; the Cuyahoga, Cleveland, Ohio; the Pickering Building, Cincinnati, Ohio; the Fisher Building, Chicago, Ill., and the Chemical Building, St. Louis, Mo.

## Dearer Fuel in Great Britain.

The high prices of coal and coke continue to disturb British iron and steel manufacturers. It appears that the coal mining companies of Great Britain quite generally drew their recent contracts so that they would expire June 30, thus enabling them to advance prices simultaneously July 1. This advance was so great as to cause almost a feeling of consternation among manufacturers of iron and steel. Alluding to this subject, the *Ironmonger* for the 14th inst. says: "There is no doubt that many industries will be seriously affected by the enormous cost of both coal and coke, and it is pretty safe to say that there are very few iron and steel manufacturers depending upon outside sources for their fuel who can afford to view the future with equanimity."

The condition is sufficiently grave to be alluded to as a "coal trade crisis." In the face of a distinctly weaker tendency in the iron market, British manufacturers are thus handicapped by an increased cost of production due to the high price of fuel. At a time when they are extremely solicitous of reducing costs they find one of their most important materials sharply advancing. And this advance is not made from a low level, but is an additional enhancement of prices that had previously been quite high. The mine owners are masters of the situation, inasmuch as they are having not only a heavy demand for export, but also an extraordinary trade from their home manufacturers. They are able to get the prices they ask and are not moved by considerations of compassion for their customers.

For the time being this situation will operate to the advantage of British competitors, including prominently the manufacturers of this country. On this point the *Ironmonger* says: "Our greatest competitor in the iron and steel industry—the leading manufacture in this country so far as the consumption of fuel is concerned—is the United States. Even under ordinary circumstances the American maker can turn out pig iron at a lower price than can the British ironmaster; but when the latter is called upon to pay fancy prices for his fuel the divergence becomes more and more marked, and there can be little doubt that the action of the colliery owners is in reality putting a premium upon the American iron and steel manufacture." Cheap fuel is enjoyed in America, and from present appearances it is likely to continue cheap and even become more so. The stagnation in our home trade causes foreign markets to be sought with avidity, and anything that handicaps our competitors is

of special value to us just now. Eventually the inroads that may be made in the trade of British manufacturers will cause diminished industrial activity in Great Britain and a decline in the demand for British coal, which will cause a reduction in its price. But in the meantime the situation must be decidedly unsatisfactory from the British manufacturer's standpoint.

## Protecting the Gold Standard.

To what extent the law of March 14 establishes and is capable of protecting the single gold standard has been discussed within a few days by Professor Laughlin of the University of Chicago in the *Journal of Political Economy*, Professor Taussig of Harvard in the *Quarterly Journal of Economics*, Mr. Walker of Massachusetts, recently a member of the House Committee on Banking and Currency, in *Gunton's Magazine*, and Secretary Gage in the *Journal of Commerce and Commercial Bulletin*. Professor Laughlin and Mr. Walker regard the law as of very little value, adding nothing appreciable to the existing legislation as to the standard, and nothing of decisive importance to the existing means of protecting it. Professor Taussig takes a much more favorable view of the efficacy of the law, and Secretary Gage regards it as a real and substantial addition to our currency legislation, both in defining the single gold standard and in not only providing the Secretary with the means of protecting that standard, but making it obligatory upon him to do so. The Secretary believes that, the gold standard having been established, even an opponent of it could not break it down unless he deliberately violated the law. We are not in the habit of assuming that any public official will do this.

If the Secretary's optimistic view is entirely justified there still remains the danger that Congress might repeal the law. A new House of Representatives is elected every two years and one-third of the Senate is elected every two years. In March there seemed to be a large sound money majority in the Senate, but several Senators who supported the bill, which was a much weaker gold standard measure than the bill originally passed by the House, are not single gold standard men at all, but bimetalists, and others who voted for the bill come from States where the cheap money sentiment is strong and who might have to change their opinions to save themselves from defeat, or might be replaced by advocates of silver. The real sound money single gold standard majority in the Senate is not so large as the vote for the compromise bill which became a law. As to the House, an election frequently makes a radical change in its complexion. The gold standard cannot be regarded as really safe as long as a large part of the people are opposed to it; they may get a majority at any time. But it is confidently believed that the sentiment for cheap money is weaker now than it used to be, and is bound to grow weaker as a foolish agitation exhausts itself, and in due time it is hoped that the cheap money craze will subside entirely, as the "fiat" money craze subsided many years ago.

The new law is sufficient for those who desire to sustain it. Whether persons who oppose it might not find some way of evading it is a pretty serious question. Most laws can be circumvented. The law does not take from the silver dollars their legal tender quality, or authorize the Treasury to redeem them in gold in order to prevent their depreciation should that be threatened. The free silver advocates believe that the way to maintain the equality of gold and silver dollars is to open the mints to the free coinage of both, which requires a



change in the law, and to disburse both at the option of the Government and not of the public creditor, which is a matter of executive discretion. There are silver dollars in the Treasury with which the payment of obligations could be commenced. To some this might seem a violation of the law of last March, but lawyers of silverite opinions would assuredly find a construction that would permit it. All sound money men, all advocates of the single gold standard, believe that to force silver dollars upon the public creditors would be extremely dangerous to the gold standard and a menace to business, and probably most of them would say without hesitation that it would shortly land the country on the silver basis, with gold going to a premium or seeking the melting pot, or taking a voyage to Europe. The Treasury cannot keep two sorts of dollars in circulation, one of which is intrinsically worth twice as much as the other.

### International Trade in War Materials.

An interesting controversy is now in progress in Europe as to the practicability and propriety of an international agreement to suppress the traffic in arms and munitions of war between civilized nations and those rated as barbarous or semi-barbarous. Naturally, it grows out of the fact that the powers which have undertaken to suppress the uprising in China and regulate the affairs of that empire find themselves confronted by native troops provided with the very best modern arms, which have come from the factories of England, Germany, France and the United States. Those who expected to find the Chinese forces a mob of undisciplined grown-up children, whose idea of war consists chiefly in waving yellow flags, beating gongs and setting off fire-crackers, are, instead, confronted with well drilled and disciplined troops armed with Mauser rifles and other modern weapons, in the use of which they are uncomfortably expert. In view of the obligation devolving upon Germany to make good the threat of the Emperor to take terrible vengeance upon the Boxers, the *Kreuz Zeitung* of Berlin denounces the British manufacturers "who have betrayed the civilized world and gained an unholy profit by selling arms to the value of millions of marks to the Mongolian barbarians," who are now using them to rid their country of unwelcome foreigners. The English reply to this foolish talk is not in all respects emollient. It calls attention to the fact that not only have 450,000 stands of German arms been shipped to China, but that most of the Boer armament is also of German make, smuggled into South Africa in piano boxes. Obviously that kind of discussion leads nowhere. The question is much better presented in the note of M. Delcasse, French Minister of Foreign Affairs, to the powers, suggesting the consideration of a basis of international agreement for the suppression of the objectionable traffic. M. Delcasse admits that France has had her share of this business, and that her manufacturers have filled all the orders they could get for merchandise of this character. If a wrong has been done in supplying savage tribes and barbarous empires with arms, the only countries not *particeps criminis* are those having nothing to sell which the savages and barbarians wanted. It is useless, therefore, to waste time and tissue in recriminations. The questions of practical interest are: Can this trade in war materials be regulated or suppressed, and should it be?

There are many theoretical reasons why the manufacture and sale of war materials should be strictly regulated by agreements between the powers, to the end that barbarians and semi-civilized peoples should not be sup-

plied with the means of becoming dangerously aggressive. There are as many practical reasons why this cannot be done, and why, if attempted, it would result in leaving weak states, with every right of self protection, powerless to protect themselves. Russia, as a party to such an agreement, would be likely to insist upon making arms contraband in Turkey and the smaller Asiatic States. Germany and France would have decided views of their own as to where the line should be drawn, which would not agree with those of Russia at all. England would not be likely to regard the matter from a view point other than that favorable to her own interests and consistent with the policy of territorial extension, which is not understood to be in all respects harmonious with the plans and ambitions of the other great powers. Indeed, it is quite conceivable that the peace of Europe might be more seriously menaced by the attempt to reconcile conflicting interests on this point than by leaving it to adjust itself, like any other trade question.

Since the discussion has arisen in connection with China, it is interesting to speculate on the probable attitude of the powers had the agreement now proposed been in force at the close of the Chinese-Japanese war. Russia would probably have insisted upon suppressing all trade with China in war supplies, and for this very reason every other European power would have insisted that the right of that empire to buy all the war material needed for its own protection should be respected, and, if necessary, guaranteed. China would herself have resented any attempt to class her among the barbarous nations, and had such an interference with her rights been attempted the results would have been disastrous to foreign interests. Russia would have taken advantage of the opportunity thus offered to possess herself of the Northern Chinese provinces, and a much more serious war than that now in progress, because less local, might have resulted, involving England, Germany, France and some of the smaller powers. Even this country might have been involved, and certainly it would have suffered vast injury in its foreign trade relations. Just now the rebels against the Manchu dynasty, marshaled by Prince Tuan, seem to be behaving in a very barbarous manner, but China is a long way from being a barbarous or even an uncivilized country. In some things it is far ahead of many of the countries which would be admitted to the counsels of the Western powers in any diplomatic agreements relative to restriction of trade in war materials. China has, or at least had, an extensive and well appointed small arms manufactory at Tientsin, while at the Kiangnan arsenal, on the Woosung River, it has a plant capable of turning out remarkable work. This establishment employs 2500 men. It includes a steel plant of modern construction, and shops containing machinery for making all kinds of firearms, from infantry rifles and small rapid fire guns to 12-inch rifled cannon 30 calibers in length. In this establishment, which is managed by the Viceroy of Nankin, the best types of modern arms and ordnance are reproduced. This work is stated to be performed wholly by native mechanics, and there are but two foreigners in the entire staff. The Chinese guns stand the tests, which are the same as those prescribed by the Western governments, and in quality and finish they are said to be quite as good as any of European make.

As a general fact, it may be said that the powers which make improper use of imported arms acquire them at times and under conditions which would render improper and impracticable any attempt on the part of other nations to regulate or suppress the traffic. As a rule, a modern armament is the first step in the direction of civilization. No country can build up permanent

institutions of any kind as long as it is defenseless and at the mercy of any stronger nation which may want its territory for commercial or other purposes. The international trade in war materials tends rather to peace than to war, and while it would be very convenient for the powers constantly planning for colonial acquisitions to keep defenseless those whom they may wish to "annex," they would soon have more serious quarrels with each other than the present conditions favor.

The argument in favor of an international agreement to suppress the trade in arms and war supplies leads inevitably to universal disarmament, and the world is not ready for this. Indeed, it is doubtful if the interests of civilized nations are not better safeguarded by their war preparations than they would be by any other means. Whatever tends to make war costly, and its issues uncertain, makes for peace and good neighborhood. Meanwhile, nothing is more certain than that the relatively strong powers cannot yet be trusted to decide which of the relatively weak ones shall be permitted to strengthen themselves for either offensive or defensive purposes. Any attempt on the part of the European powers to regulate this matter would set in motion the most interesting and complex system of diplomatic chicanery imaginable. In one way or another each government would facilitate the indirect shipment of arms wherever another government was especially desirous that they should not go, and the resulting complications would be a more serious menace to the peace of Europe than the ability of such peoples as the Chinese, Turks, Moors, Soudanese and Ashantis to offer an effective resistance to the aggressions of the great powers.

The reduction in stocks of pig iron in British storage yards, which has continued for a long time, now appears to have been checked. According to reports recently issued it would seem that the minimum of stocks in these storage yards was reached in the second week of July, when the total quantity of pig iron on hand in all of them was 175,227 tons. For the first time since the reduction set in stocks showed an increase for the week ending July 11. It is true that the increase that week was only 150 tons, but when it is considered that for the whole of this year the weekly decrease has ranged from 10,000 to 15,000 tons, it will be seen that the change to an increase is significant, even though the increase is slight.

### The Ashland Steel Company.

The entire plant of the Ashland Steel Company, Incorporated, at Ashland, Ky., manufacturers of Bessemer billets, slabs and wire rods, was closed for three weeks overhauling the steel plant and rod mill departments, which have been running pell mell night and day and part of Sunday for the past year and a half. The company have put in natural gas throughout all their departments and started up in full on the 23d, with prospects of a good run. The annual meeting of the stockholders was held at Ashland last week and the following directors were elected: John G. Peebles and A. T. Johnson of Portsmouth, W. W. Franklin of Columbus, B. H. Burr and Oscar Richey of Ironton, E. C. Means, Robert Peebles, T. M. Adams and Ironton A. Kelly of Ashland. The Board of Directors organized by electing the following officers: Ironton A. Kelly, president; T. M. Adams, vice-president; B. H. Burr, secretary, and L. R. Putnam, treasurer.

The Petroleum Iron Works Company, Washington, Pa., manufacturers of plate work of all kinds, have received an order from the Risdon Iron & Locomotive Works of San Francisco, Cal., for a tank 95½ feet in diameter and 28 feet high, with steel riveted roof, having a capacity of 35,000 barrels of 42 gallons. The tank will contain 110 tons of material, including necessary rivets and bolts. The contract is for all material ready to set up on cars at Washington.

### The Loss of Strength in Steel Rails.

The serious accident to the Scotch express at St. Neots on December 24, 1895, due to the compound fracture of two rails, was one of the causes leading to the appointment by the British Board of Trade of a committee "to inquire to what extent of loss of strength in steel rails is produced by their prolonged use on railways under varying conditions, and what steps can be taken to prevent the risk of accidents arising through such loss of strength." The committee were appointed in May, 1896, but their report has just been issued. It is signed by all the members—Lord Blythwood, chairman; Sir Benjamin Baker, Sir Isaac Lowthian Bell, Professor W. R. Dunstan, Professor A. B. W. Kennedy, Major F. A. Marindin, E. P. Martin, E. Windsor Richards, Sir W. C. Roberts-Austen, Professor T. E. Thorpe, and Professor W. Cawthorne Unwin. The report with its twelve appendices covers 124 pages, and includes several plates of microphotographs, autographic records of tests, &c. It must, however, says an English contemporary, be regarded as a summary of experiments and information rather than as a series of recommendations for future practice.

The committee, in the first instance, addressed a communication to the principal railway companies, asking them to assist by supplying the results of any experiments made on worn or broken rails, and by furnishing specimens of worn and broken rails should the committee decide to carry out any experiments.

The question of the loss of strength in steel rails is one which has excited much attention abroad. In Austria-Hungary and also in Germany "trial stretches" (*versuchstrecken*) have been established on the lines of companies belonging to the Association of German Railway Boards, to which all railway companies in those two countries and some in Holland and Belgium belong. On each of these trial stretches rails from one cast of steel, of which the chemical composition and physical qualities have been ascertained, are laid, and are carefully observed. These stretches were established in 1891, but so far the time has not been sufficient to enable the association to draw practical conclusions from the result of the observations. In Austria-Hungary, on the State railways, a regulation has been made requiring the renewal of rails when through wear they have suffered a diminution in height of 6 mm., the ordinary height of a rail on these railways being 125 mm., but in Germany no precise limit has been fixed. Two reports, dealing mainly with the effects of corrosion, were received from the Italian Government, and further information was received from the Belgian, Russian and United States governments.

The committee decided to undertake a series of experiments on worn and broken rails, of which a number should be subjected to the ordinary falling weight tests and selected specimens to tensile and bending tests, the latter being chemically analyzed and examined by the recent methods of photomicrography. A considerable number of rails were tested in the presence of members of the committee at the Northeastern Railway Company's works at Gatshead, and at the Lancashire & Yorkshire Railway Company's works at Castleton, near Rochdale, and from them a selection of 16 rails for further investigation was made by Professor Unwin and Windsor Richards. The Lancashire & Yorkshire and Northeastern railway companies supplied specimens of the chosen rails cut in a suitable manner for the further investigations proposed, which were apportioned among members of the committee as follows: Mechanical tests, Professor Unwin; chemical analysis, Dr. Thorpe; photomicrographic examination, Sir W. Roberts-Austen; atmospheric corrosion tests, Professor Dunstan.

Professor Unwin gives the result of transverse, hardness and tension tests on each of the selected rails, and also Tetmajer's and Dormus' coefficients of quality for each rail. Dr. Thorpe gives an analysis of each of the 16 selected rails, and also of the rail, the fracture of which on the Great Northern Railway at St. Neot's in December, 1895, led to the appointment of the committee, together with a summary of the methods employed in his analysis.

Sir William Roberts-Austen describes the method of examining the rails by photomicrography, the effect of the various constituent elements and the manner in which they combine; he also compares the mechanical, chemical and photomicrographic results of the experiments on the selected rails. His examination of the St. Neot's rail disclosed the presence of patches of "Martensite" in portions of the rail, and in order to ascertain whether this, the characteristic constituent of hardened steel, can be produced by other means than by quenching the steel from a high temperature, Sir William Roberts-Austen has examined a portion of the tube of a 4.7-inch quick firing gun, making a study of the nature of the change produced by the action of the explosive. He is satisfied that the conditions which prevail in the gun do produce changes in the steel which resemble the local



changes in structure of the St. Neot's rail, but do not enable the local patches of Martensite occurring in this rail to be attributed to any other known cause than the quenching of the steel from a high temperature. The structure of this rail is evidently abnormal.

Professor Dunstan gives an account of the manner in which atmospheric corrosion affects steel, having regard to its chemical composition and the nature of its structure. The results of his experiments are illustrated by selected photographs of the specially corroded surfaces of certain of the rails chosen by the committee. These results show how important it is that the condition and mode of distribution of the constituents of steel, and not merely their nature and quantity as determined by chemical analysis, should be taken into account in judging of the suitability of the metal for the manufacture of rails. Local atmospheric corrosion is often determined by the presence of patches of irregularly distributed impurity. Windsor Richards, in addition to preparing an account of the falling weight tests, has drawn certain deductions from them, and in his conclusions refers to the effects on rails of incipient small cracks forming nicks. Mr. Martin has conducted some experiments on rails in which fissures or nicks have been purposely made by a cutting tool.

In addition to these experiments conducted by the committee, Sir Lowthian Bell has tested a very large number of rails, and he has favored the committee with a memorandum thereon, in which he calls attention to the small proportion of rails broken annually, which he estimates as only one to every 25,000 laid down, and he also discusses the effect on a rail of the rolling weight of a train, and gives the vertical and lateral deflections due to the passage of a train at different rates of speed.

The committee requested the chemical and engineering members to prepare criticisms on the evidence in the possession of the committee from the chemical and mechanical points of view respectively. Sir William Roberts-Austen and Dr. Thorpe accordingly prepared a memorandum on the chemical aspect of the evidence before the committee, and their own experimental work. In this memorandum they come to the following conclusions: The evidence before the committee indicates what the limiting proportions of carbon, sulphur, phosphorus, manganese and silicon should be. As regards the influence of phosphorus, it is pointed out that, in a broad sense, brittleness of steel does not depend on the total amount of phosphorus present, as that element may exist in steel in at least two different forms, one of which is comparatively innocuous. It is very important that all who are responsible for the manufacture or use of steel rails should realize that steel is not the homogeneous mass it is often supposed to be, but possesses a complex structure. The nature of this structure will vary greatly with the mechanical and thermal treatment to which the metal has been subjected. The durability of the rail depends in no small measure on its structure, which may, if the specimens of steel have been suitably prepared, be revealed by the microscope. The peculiar structure of the St. Neot's rail, for instance, can be exactly imitated.

Professor Unwin, with the assistance of Sir Benjamin Baker and Professor Kennedy, prepared a memorandum reviewing from the mechanical point of view the information before the committee. In this memorandum the following conclusions are arrived at: The preponderance of fractures near the ends of rails seems to show that the greater straining action due to discontinuity at the joint is a contributing cause of fracture, and this can be remedied by adopting rails of sufficient strength with webs of ample thickness and secure types of fastening, and by care that no looseness arises in service. The fact that worn rails are improved in strength and ductility by annealing proves that part of the deterioration of rails in service is of the nature of what is sometimes termed "fatigue." It appears certain that in some cases fractures of rails have been due to fissures formed during service. How far the minute transverse fissures, very often noticed in the running surface of old rails, give rise to these larger induced flaws requires further investigation. It is not likely that they usually spread into the substance of the rail, because they are common in old rails, and fractures would be more frequent than they are if that were the case. Also, the evidence as to the existence of visible flaws or defects in the fractured surface of rails is very conflicting. In some cases, undoubtedly, the combined effects of the weakening of a rail by wear and corrosion, possibly also increased straining action from defective packing of sleepers, and the presence of a flaw or fissure of not inconsiderable size, have led to fracture of the rail. That such defects appear most commonly in the head of the rail is evidence to a certain extent that they are induced by the hammer hardening of the top surface. It is very desirable that the mechanical tests to which rails are subjected should be as far as possible standardized in connection with the

weight, the section and the chemical composition of the rail.

With these conclusions the committee agree, and as regards chemical composition they do not think it desirable to insist upon too high a proportion of carbon, manganese or silicon in the steel, having regard to the ordinary contingencies of manufacture, and the greater susceptibility of high carbon steel to thermal influences.

## MANUFACTURING.

### Iron and Steel.

The report that the Carpenter Steel Company of Reading, Pa., had received a rush order from the Government for 600 12-inch navy shells is untrue. No such order has been placed.

The new Bessemer steel plant of the Republic Iron & Steel Company, at Youngstown, Ohio, is now ready to be started up. Some detail work remains to be done, but it is probable the plant will be started just as soon as the wage scales for the puddling and bar iron mills have been arranged.

Reports were current in Pittsburgh last week that there was prospective litigation between the American Steel & Wire Company and several blast furnaces belonging to the Bessemer Furnace Association, over pig iron contracts, the claim being that the American Steel & Wire Company were not furnishing shipping directions on iron that should have been taken out some time since. We can state officially that there will not be any litigation, as the matter of the contracts has been arranged to the satisfaction of both buyer and seller.

A number of puddlers at the plant of Moorhead, Brother & Co., at Pittsburgh, who went out on strike, have returned to work. This firm have reduced wages of their puddlers from \$6 to \$4.80 a ton, and made corresponding reductions in the finishing department.

At the recent annual stockholders' meeting of the Cumberland Iron & Steel Shafting Company, Cumberland, Md., the following officers were re-elected: Merwin McKaig, president; W. J. Muncaster, vice-president and general manager, and Albert Charles, secretary and treasurer.

The Palmer Steel & Iron Company, Muncie, Ind., are improving the opportunity afforded them by the July shut down to make thorough repairs in their rolling mills. The addition of an 8-inch mill is contemplated, but has not yet been fully decided.

The new rolling mill company under consideration for some time at Cambridge, Ohio, organized last week and will be known as the Cambridge Rolling Mill Company. The stock has been subscribed by the following Cambridge citizens: Dr. I. H. Sheppard, A. A. Taylor, W. J. Gillespie, J. P. Spence, C. S. Sheppard and J. B. Taylor. The following officers have been elected: Dr. I. H. Sheppard, president; W. J. Gillespie, vice-president; C. S. Sheppard, treasurer; L. C. Taylor, secretary. The above officials, together with A. A. Taylor, J. B. Taylor and J. P. Spence will constitute the board of directors.

All departments of the Homestead Steel Works of the Carnegie Steel Company at Homestead are in full operation this week.

Zug & Co., Limited, of Sable Iron Works of Pittsburgh have signed the Amalgamated Association puddling and bar iron scales and also the sheet scale. The concern are manufacturers of high grade iron bars and black and galvanized sheets.

The Amos & Davis Iron Company of Ironton, Ohio, operating Versailles Furnace, have applied for a receiver and E. S. Culbertson has been appointed. Inability to meet obligations was the cause.

The statement that Nos. 1 and 2 Monongahela furnaces of the National Tube Company, at McKeesport, will be torn down and new stacks erected is untrue. It is probable that No. 1 Furnace will be taken out this fall and relined. When this is done the furnace will be increased to a 90-foot stack and a new skip hoist added. Some other improvements of a minor nature will also be made. This will naturally have the effect of increasing the capacity of the stack and will bring it up to possibly 400 tons a day. The same course will be pursued with regard to No. 2 Furnace, when it is found necessary to take it out of blast.

The Lorain Steel Company, against whom the General Electric Company have just obtained a judgment for damages for infringement on the patent of the Thomson-Houston Electric Company on improved electric motor regulators, is one of the constituent companies of the Federal Steel Company. The plant consists of steel works and rolling mills, besides foundry and machine shops, complete for the manufacture of switches, electric motors and appliances for street railroads.

Furnace B of the Edgar Thomson group of the Carnegie Steel Company, at Bessemer, Pa., has been taken out of blast. The furnace will be rebuilt and enlarged, and the capacity brought up to 500 tons a day or more. The stack will be equipped with automatic top filling device, which will do away with the services of top fillers.

The salaried employees of Hazelton Works of the Republic

Iron & Steel Company, at Youngstown, Ohio, have been notified that commencing August 1 their services will not be needed, and that all can look for other employment. This is taken to mean that these works will not be operated for some time.

At the recent annual stockholders' meeting of the Rome Merchant Iron Mill, Rome, N. Y., the following officers were elected: President, Jim Stevens; vice-president, S. B. Stevens; secretary and treasurer, C. W. Lee.

The annual meeting of the stockholders of the Ohio Iron & Steel Company, operating Mary Furnace at Lowellville, Ohio, was held last week, and directors were elected as follows: Thos. H. Wells, John C. Wick, Myron C. Wick of Youngstown; Thad. F. Woodman of Chicago; Samuel L. Mather of Cleveland; Fred H. Wick and Robert Bentley of Youngstown. The directors organized as follows: Thos. H. Wells, president; John C. Wick, vice-president; Fred. H. Wick, treasurer, and Robert Bentley, secretary and general manager. The business of the Ohio Iron & Steel Company for the past year shows the largest profit of any one year in the history of the company. Considerable new equipment has recently been added to the furnace and its capacity increased. It is now in first-class condition for a long run.

Phillips, Nimick & Co., operating the Sligo Rolling Mills, Pittsburgh, Pa., manufacturers of plates, have signed the Amalgamated Association scale.

#### Machinery.

The annual meeting of the stockholders of the Youngstown Foundry & Machine Company, Youngstown, Ohio, was held last week. The old board of directors was re-elected. Officials were elected as follows: Thos. Parrock, president; W. J. Wallis, vice-president, and Frank A. Williams, secretary and treasurer. It was decided at the directors' meeting to go ahead with the work of equipping the new machine shop with the most modern machinery that can be found, and this shop will be in operation at an early date. The operations of the Youngstown Foundry & Machine Company for the past year were very successful; in fact, that concern had the best year in their history. They manufacture light and heavy machinery castings of every description, and make a specialty of sand and chilled rolls.

The Monongahela Consolidated Coal & Coke Company of Pittsburgh will begin the erection of a power house within the next 30 days which, when completed, will furnish power for the mines at Camden, Streets Run and Dravosburg. The latest mining machinery known to the coal mining business will be placed in the mines named above, and they will be lighted with electric lights. New electric locomotives will be used, instead of mules to haul the coal to the mouth of the mines. It is said this means the displacement of at least 2000 miners in the district near McKeesport, Pa.

The Straight Line Engine Company, Syracuse, N. Y., recently rebuilt a portion of their foundry, replacing an old brick and wood structure by a continuation of the iron one built in 1893. Business has been very good, with steady work all through the year, but has fallen off somewhat lately. A couple of months ago they employed something over 200 men, and now 190; quite double the number employed a year ago.

The Westinghouse Electric & Mfg. Company of East Pittsburgh, Pa., have secured a contract for the supply of the electric equipment required for an extension of the plant of the local electric company in Seoul, the capital of Corea. The contract, which is valued at \$21,000, calls for two 120 kw. two-phase belted alternating current generators, three 62½ kw. and two 37½ kw. static transformers; also one 75 kw. rotary transformer, together with a number of converters for incandescent lights, arc lamps, a switchboard, together with all accessories, &c. Three complete lighting sets have just been shipped for utilization in the machine shops of the Chinese Eastern Railroad. These orders are in addition to the contract obtained by the Westinghouse Company for the lighting of the stations along the Great Manchurian road.

Last week the stockholders of the Niles Boiler Works met at Niles, Ohio, and elected the following officials: R. G. Sykes, J. H. Orwig, E. A. Gilbert, D. S. Strickland and W. Aubrey Thomas. The directors then met and chose the following officers: R. G. Sykes, president; W. Aubrey, vice-president; C. B. Sell, secretary and treasurer; J. H. Orwig, general manager, and E. A. Gilbert, engineer.

The York Mfg. Company of York, Pa., manufacturers of ice making and refrigerating machinery, are to supply the refrigerating machinery of 40 tons capacity to the York Refrigerating & Fruit Company, recently organized in that city, and also the refrigerating apparatus of 25 tons capacity to the Rochester Packing & Cold Storage Company, who are about to erect a cold storage plant in Rochester, N. Y.

#### Hardware.

Extensive improvements have been made to the plant of the Frazer & Jones Company, Syracuse, N. Y., including new and improved power, a new brass foundry and additional malleable works. From last October to May it was necessary to operate the works day and night in order to keep up with the orders. At the present time there is a let up in activity, but that will

only continue for a few weeks, when business will be resumed with full force. They employ 487 hands.

The Nagley Mfg. Company, Lyons, N. Y., report that their trade on transplanting machines and pruning shears has been very satisfactory this season. They have more orders for tobacco shears and needles at this date than any one year in the last five. There seems to be more of a demand for tools this year than ordinarily.

#### Miscellaneous.

The Lunkenheimer Company, brass founders, Cincinnati, will erect a \$22,000 factory on Longway avenue, extending from Tremont to Waverley avenue, Fairmount. It will be two stories high and will contain over 40,000 square feet. It will be run in addition to their present factory and will give them very greatly increased facilities, which were badly needed, and will enable them to make prompt shipments.

A bill of voluntary assignment was filed in the United States District Court by the Vulcan Foundry Company of Pawtucket, R. I., July 18. Half the stock is held by Providence and Worcester parties. The company was incorporated in 1897 with a capital stock of \$100,000, and at the start over 100 hands were employed. Since the iron molders' strike a year ago business has been dull. Gardiner Sims of Providence, who served during the war with Spain as chief engineer of the repair ship "Vulcan," was connected with the concern. The plant is an excellent one, thoroughly equipped with all modern accessories.

The National Elevator & Machine Company, Honesdale, Pa., are erecting a new foundry, 66 x 96 feet, and 18 feet high. Their other buildings have lately been overhauled and put in first-class shape.

The Union Switch & Signal Company of Pittsburgh have secured a large contract for the supply of special frogs and switches, which will be shipped as soon as possible to the Cape Government railway. It is the first order of the kind that this concern have secured for South Africa, and follows the recent order for rails secured by the Carnegie Steel Company. The contract of the Union Switch & Signal Company is understood to be worth several hundred thousand dollars. It was secured through Sir Douglas Fox, who acts as consulting engineer expert for several of the British and colonial railways. It was placed by F. Stuart Williamson, who represents Sir Douglas Fox in New York.

The scheme which has been under way for some months of organizing the firms of Atwood & McCaffrey, Best, Fox & Co., Best Mfg. Company, Wilson-Snyder Mfg. Company and Pittsburgh Valve & Machine Company into an organization to be known as the Pittsburgh Valve & Construction Company, has been abandoned.

The New York Carbide Generator Company has been incorporated in New York. The company purpose to manufacture and sell machines for producing gas and to make and sell gas. The capital is \$500,000. The directors are: George S. Bonner and C. L. Kingsley of New York, and Walter W. Wood of East Orange.

The report that the Youngstown works of the American Bridge Company, at Youngstown, Ohio, would be dismantled and removed to some other location, probably the Pittsburgh district, is without foundation. It is said to be the intention of the American Bridge Company to operate this plant as heretofore.

The Pittsburgh Coal Company have placed an order with the Youngstown Car Mfg. Company, Youngstown, Ohio, for 100 coal cars.

The Pennsylvania Lead Company of Pittsburgh have filed a petition in the courts for dissolution. The assets of the company are \$202,182.11, to be distributed as follows: J. E. Schwartz, \$191,974.65; H. E. Anderson, D. W. Doyle estate, J. L. Schwartz and F. N. Schwartz, \$2001.82 each; George Fauce, \$200.

The Allegheny Plate Glass Company have secured a charter and will erect a plate glass factory at Creighton, Pa., on the Allegheny River. The nominal capital is \$1000, but this will be increased later to probably \$500,000. Among those interested in the new company are Charles B. McLean of the Lincoln National Bank of Pittsburgh, H. M. Brackenridge of the James H. Baker Mfg. Company, and Frank S. Brockett, formerly superintendent of the Charleroi and Creighton plants of the Pittsburgh Plate Glass Company.

The fan house at the Youngstown Works of the H. C. Frick Coke Company was burned on Monday night, July 23. The plant will have to be closed for about two weeks until a new engine and fan can be installed.

The Atherton Mfg. Company, Providence, R. I., were incorporated on the 24th inst., with a capital stock of \$3000. The company are to manufacture and sell all kinds of machinery and novelties.

Jones & Laughlins of Pittsburgh are about to build several steel barges, each of 12,000 tons capacity, to carry their furnace slag from Pittsburgh up the Monongahela River to bottom lands above the company's mines at Coal Centre. The slag is to be used for filling land to be reclaimed.



## The Iron and Metal Trades.

The gravity of the situation is indicated by the arrangements which have been made for a conference of the leading Steel and Bessemer Pig Iron interests, which is to be held in the office of the Federal Steel Company, Chicago, to-morrow (Thursday) morning at 10 o'clock. The call is signed by E. H. Gary of the Federal Steel Company, C. M. Schwab of the Carnegie Steel Company, and Joseph G. Butler, Jr., representing the Bessemer Furnace Association, and states that at a former meeting of the presidents of the leading Steel companies it was thought advisable to call this meeting to go over the situation and see what can be done to improve it. The plan proposed is to cut down production as much as possible. Every blast furnace controlled by these interests is to be closed under agreement for one month, the Federal Steel Company, Carnegie Steel Company and other large companies agreeing to do this if the others will. The success of such a plan will depend upon the unanimity with which it is accepted. The dissent of a single important interest would probably be fatal.

The week just closing has developed considerably more business than its predecessors, and this has given a mild sort of encouragement to manufacturers. Nevertheless the increase in the volume of business is not great enough by any means to satisfy the manufacturers, who need a steady stream of orders to keep their mills running or their blast furnaces free from accumulating heavy stocks of Pig Iron. The sales made have in nearly every instance been accomplished at the still further sacrifice of prices. A lower range of prices than that of last week now prevails through almost the whole line. It is assumed by some that the bottom is now in sight because present prices in many cases represent actual cost of production, but this has often proved to be a delusion. Prices will continue to settle until the supply falls below the demand.

We have information of heavy transactions in Pig Iron for export. Our Birmingham correspondent reports sales in that district of at least 40,000 tons, and a Pig Iron house outside of the district reports sales of 7000 tons. Much more export trade could be done, not only in Pig Iron but in finished products, if vessel room could be secured, but it is difficult at present to arrange for ocean carriage and freight rates are also nearly prohibitory.

Restriction of production is proceeding quite rapidly, more blast furnaces having recently blown out, while others are fast getting into shape for suspending operations. It is likely now that the Western Bar mills will remain closed for considerably longer than had been expected, in view of the fact that the manufacturers and the Amalgamated Association have locked horns over the wages scale for the coming year. The association have positively refused to make any modification of the scale formulated at Indianapolis, and the manufacturers have just as positively refused to accept it. The closing of so many mills should have an effect on prices of Bars, but Steel Bars have sold within the week at lower rates than the previous week.

A very interesting item of news is the announcement that the Carnegie Steel Company are about to enter into the manufacture of Rods on a large scale, and that they may also decide to manufacture Hoops, Bands and Cotton Ties.

Some failures of foundrymen have occurred in New York and New England, but they are not regarded as indicating any general weakness in the trade.

## A Comparison of Prices.

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type Declines in Italics.

	July 26, 1900.	July 19, 1900.	June 27, 1900.	July 26, 1899.
<b>PIG IRON:</b>				
Foundry Pig, No. 2, Standard, Phila.	\$16.25	\$15.50	\$18.00	\$20.00
Foundry Pig, No. 2, Southern, Cincinnati	16.00	16.50	17.75	.....
Foundry Pig, No. 2, Local, Chicago.	17.50	18.00	19.50	19.50
Bessemer Pig, Pittsburgh	16.00	17.00	19.00	20.75
Gray Forge, Pittsburgh	15.00	15.50	17.00	17.50
Lake Superior Charcoal, Chicago...	\$21.00	22.00	22.50	21.50
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh	19.00	20.00	25.00	24.00
Steel Billets, Philadelphia	22.50	22.50	28.00	26.00
Wire Rods, Western Mill	30.00	35.00	35.00	.....
Steel Rails, Heavy, Eastern Mill	35.00	35.00	35.00	20.00
Spikes, Tidewater	2.10	2.15	2.15	2.00
Splice Bars, Tidewater	2.00	2.00	2.00	1.90
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago	9.50	9.50	11.00	15.00
O. Steel Rails, Philadelphia	13.00	13.00	17.00	17.00
O. Iron Rails, Chicago	12.50	12.50	14.00	19.00
O. Iron Rails, Philadelphia	15.00	15.50	17.00	20.50
O. Car Wheels, Chicago	18.00	18.00	18.00	15.50
O. Car Wheels, Philadelphia	17.00	17.00	18.00	16.50
Heavy Steel Scrap, Chicago	9.00	9.00	11.00	13.00
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars, Philadelphia	1.37	1.30	1.50	2.00
Common Iron Bars, Youngstown	1.30	1.35	1.50	1.85
Steel Bars, Tidewater	1.30	1.40	1.60	2.20
Steel Bars, Pittsburgh	1.10	1.15	1.40	2.05
Tank Plates, Tidewater	1.31	1.30	1.55	2.65
Tank Plates, Pittsburgh	1.10	1.15	1.30	2.50
Beams, Tidewater	2.05	2.05	2.05	2.15
Beams, Pittsburgh	1.90	1.90	1.90	2.00
Angles, Tidewater	1.95	1.95	1.95	2.15
Angles, Pittsburgh	1.80	1.80	1.80	2.00
Skelp, Grooved Iron, Pittsburgh	1.25	1.25	1.45	2.35
Skelp, Sheared Iron, Pittsburgh	1.25	1.25	1.45	2.50
Sheets, No. 27, Chicago	3.15	3.10	3.10	3.25
Sheets, No. 27, Pittsburgh	2.95	2.90	2.90	3.00
Barb Wire, f.o.b. Pittsburgh	2.80	2.80	2.80	3.10
Wire Nails, f.o.b. Pittsburgh	2.20	2.20	2.20	2.50
Cut Nails, Mill	1.95	1.95	2.05	2.20
<b>METALS:</b>				
Copper, New York	16.37½	16.37½	16.25	18.50
Spelter, St. Louis	4.12½	4.00	4.05	5.65
Lead, New York	4.00	4.00	4.25	4.55
Lead, St. Louis	3.95	3.95	4.20	4.60
Tin, New York	33.50	34.00	30.25	31.75
Antimony, Hallett, New York	9.50	9.62½	9.62½	9.75
Nickel, New York	55.00	55.00	55.00	56.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.84	4.84	4.84	4.55

## Chicago. (By Telegraph.)

Office of The Iron Age, 1205 Fisher Building, Chicago, July 25, 1900.

Fully 50,000 tons of Steel, mainly Bars, were sold in this market last week, mostly for extended deliveries, principally to agricultural implement makers and mainly at prices below open quotations. The inquiries now in the market are for tonnage considerably in excess of that figure, one local prospective purchaser having asked bids for 40,000 tons of material. Most of the business transacted has been in good round lots, ranging from 10,000 tons down. The army of small buyers are on-lookers as yet, with increasing symptoms of a desire to buy. Some sellers say they are importuned to sell their customers just when the right time to buy arrives, a responsibility which they do not covet. These buyers are holding back through fear that later they may purchase at lower prices. They need the material, but want to be on a parity with competitors. Plates share to some degree the liveliness of Bars, but other products have not, as a rule, reached the acute stage, the ostensible reason being that the confidence is still lacking in the stability of prices. In Bars some sellers discern a strengthening tendency. They say prices quoted a week ago will not be repeated, but in other products the tendency continues downward with few, if any, exceptions.

**Pig Iron.**—The Pig Iron market is peculiar in that no one knows just what the market is. Some sellers are high and dry above current business, limiting their activities to the forwarding of Iron on old contracts. Other makers are gathering in whatever small contracts are abroad. Still others are bent upon the difficult task of finding out the proper range, so as to be in line if they want to, but their efforts meet with scant success, owing to the elusiveness of this line of values. But quite recently there has appeared among one or two sellers who heretofore have been indifferent to business a sudden desire to learn just what is the matter with the buyers and just what price will bring them into the market; in other words, an unwillingness to continue the late policy of inactivity. It is not meant by this that they will make deep incisions in current prices. The market is thus in the estimation of some faction approaching a critical stage, though all interests do not take that view of it. No large orders have been placed this week, but of the small lot business there has been fully as much as at any time in recent months, and per-

haps more. Hovering around and below the market are a great many orders for future shipments. These coming orders are shy and keep at a respectable distance, dipping only at times into the arena on a quest of discovery. What is learned about prices is unsatisfactory and the buyers retire with promises to come again a little later. Quotations are as follows:

Lake Superior Charcoal.....	\$21.50 to \$22.00
Local Coke Foundry, No. 1.....	18.00 to 18.50
Local Coke Foundry, No. 2.....	17.50 to 18.00
Local Coke Foundry, No. 2.....	16.50 to 17.00
Local Scotch, No. 1.....	18.50 to 19.00
Ohio Strong Softeners, No. 1.....	19.00 to 19.50
Southern Silvery, according to Silicon.....	19.35 to 20.35
Southern Coke, No. 1.....	17.85 to 18.85
Southern Coke, No. 2.....	17.35 to 18.35
Southern Coke, No. 3.....	16.35 to 17.35
Southern Coke, No. 1 Soft.....	17.85 to 18.85
Southern Coke, No. 2 Soft.....	17.35 to 18.35
Foundry Forge.....	15.85 to 16.85
Gray Forge and Mottled.....	15.60 to 16.60
Southern Charcoal Softeners, according to Silicon.....	19.35 to 20.35
Alabama and Georgia Car Wheel.....	22.85 to 23.85
Malleable Bessemer.....	19.00 to 20.00
Standard Bessemer.....	20.00 to 21.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	25.50 to 26.00

**Bars.**—The Bar situation is somewhat complicated by the uncertainty respecting the time Iron mills will resume operations. The prospects for an immediate agreement with the Amalgamated Association are not flattering, owing, it is said, to some keen competition in prices for Bars having been made during the past few days which were very attractive to the buyers, and the latter have not hesitated to show their appreciation. Result, a heavy volume of business, some sellers being rather surprised at the tonnage they now find on their books. Exact statements of the business transacted are not attainable, but 50,000 tons is pronounced a moderate estimate by two of the principal sellers. There is a large amount of business still in the market, one of the largest implement makers of Chicago having inquired for 40,000 tons. From mill quotations on moderate sized lots are 1.30c. to 1.35c. for both Iron and Steel. Store quotations are 1.75c. for Iron and Steel and 1.90c. for Hoops.

**Structural Material.**—Nothing of a notable character has developed in Shapes, but the same excellent inquiry in a small way continues without abatement, making in the aggregate a nice tonnage. It is general in its character and destination. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 2.05c.; 18 inches and over, 2.15c.; Angles, 3 inches and over, 1.95c.; Angles under 3 inches, 1.40c.; Tees, 2.10c.; Universal Plates, 1.40c. From local yards small lots of Beams and Channels are quoted 2.55c. to 2.75c.; Angles, 2.20c. to 2.30c. rates, and Tees, 2.40c. to 2.60c.

**Plates.**—In number orders from store are above the normal; in tonnage they are perhaps below the normal. Buyers are slow, repeated lessons having impressed upon them the falling nature of the past and present markets. Some have become quite pessimistic in their views and it will require a decided strength of prices to win them back to a rational belief. Mill business is moderately good, one recent order placed here being for 1200 tons. Quotations are as follows: Tank, 1.35c. to 1.40c., and Flange, 1.70c. to 1.80c. From store Tank is quoted 1.65c. to 1.80c., and Flange, 1.90c. to 2c.

**Merchant Pipe.**—Modest improvement in demand is reported, general in its character and composed mainly of small orders. Prices are unchanged as follows:

Sizes.	Black.	Galvanized.
1/2 to 1 1/2 inch and 9 to 12 inches.....	61 2-10	48 2-10
3/4 to 8 inches.....	66 2-10	53 2-10

**Sheets.**—Galvanized Sheets are slightly lower. From store they are quoted 70 and 12 1/2. Trade is of moderate volume, but not notably so. For Black Sheets demand is fair. Black Sheets are 3.40c. to 3.50c. for No. 27. Heavy Sheets, Nos. 10 to 14, are quoted 2.10c. to 2.30c. from store, and No. 16, 2.60c. to 2.80c.

**Merchant Steel.**—Large consumers of Merchant Steel are in evidence, but are slow in closing out. They speak encouragingly of their own expected trade, but are looking for assurances that firmness has been attained before buying material. Activity in the early future is deemed not unlikely. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Tire, 2c. to 2.10c.; Open Hearth Spring Steel, 2.50c. to 2.75c.; Toe Calk, 2.75c. to 3c.; Sleigh Shoe, 2c. to 2.25c.; Cutter Shoes, 2.75c. to 3c.; Ordinary Tool Steel, 7c. to 7 1/2c.; Special, 13c. and upward.

**Rails and Track Supplies.**—There has been this week a good trade in Track Fastenings on a level somewhat revised. Rails are without change. The heavy buyers of last winter, it is said, are without exception specifying freely on their large contracts, with every prospect that

track laying this season will be as large as expected. Nominally prices are as follows: Rails are \$35 to \$37 for Standard Sections, and \$30 to \$35 for Light Rails. Splice Bars, 1.50c. to 1.60c.; Spikes are quoted 1.80c. to 1.90c.; Bolts, with Hexagon Nuts, 2.40c. to 2.50c.; Square Nuts, 2.30c. to 2.40c.; Links and Pins, Steel or Iron, 2c.

**Old Material.**—Conditions vary little from those of a week ago. Quiet reigns, with evidences of remote recovery. Offerings come largely from the chief makers and are absorbed at prices slowly receding, dealers being the purchasers. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$12.50 to \$13.00
Old Steel Rails, mixed lengths.....	9.50 to 10.00
Old Steel Rails long lengths.....	10.50 to 11.00
Relaying Rails.....	20.00 to 22.00
Old Car Wheels.....	18.00 to 19.00
Heavy Melting Steel Scrap.....	9.00 to 10.00
Mixed Steel.....	8.00 to 9.00
Iron Fish Plates.....	12.00 to 13.00
Steel or mixed do.....	11.00 to 12.00
Iron Car Axles.....	16.50 to 17.50
Steel Car Axles.....	15.00 to 16.00
No. 1 Railroad Wrought.....	12.00 to 13.00
No. 2 Railroad Wrought.....	10.50 to 11.00
Shafting, Iron and Soft Steel.....	15.00 to 16.00
No. 1 Wrought.....	9.00 to 9.50
No. 1 Country Wrought.....	8.00 to 8.50
No. 1 Mill.....	7.00 to 7.50
No. 2 Mill.....	5.50 to 6.00
No. 1 Busheling.....	8.00 to 8.50
No. 2 Busheling.....	7.00 to 7.50
Iron Car Axle Turnings.....	8.00 to 8.50
Soft Steel Axle Turnings.....	7.00 to 8.00
Machine Shop Turnings.....	6.50 to 7.00
Wrought Drillings.....	6.00 to 6.50
Cast Borings.....	4.00 to 4.50
Mixed Borings and Turnings.....	5.00 to 6.00
No. 1 Bolders, cut.....	8.50 to 9.00
No. 2 Bolders, cut.....	6.00 to 6.50
Boiler and Ship Scrap.....	8.00 to 8.50
No. 1 Cast.....	10.00 to 11.00
No. 2 Cast.....	7.00 to 8.00
Railroad Malleable Cast.....	10.00 to 10.50
Agricultural Malleable Cast.....	9.00 to 9.50

**Metals.**—Copper is in fair demand, with prices unchanged at 16 1/4c. for Lake and 16 1/2c. for Casting. Lead is without activity at 3.95c. for Desilverized and 4.05c. for Corroding.

D. L. Cobb, who represents in Chicago and St. Louis territory the Sloss-Sheffield Steel & Iron Company and the Sloss Iron & Steel Company, has just been appointed also exclusive agent for the sale of Allegheny and Roanoke Irons for Illinois, Wisconsin, Minnesota and Missouri. These latter Irons form a complement to the grades previously sold by Mr. Cobb and permit him to make complete mixtures for foundry purposes.

## Philadelphia.

Office of The Iron Age, Forrest Building, (PHILADELPHIA, PA., July 24, 1900.)

There is a better feeling in the Iron market, and it looks as though a slight reaction had set in. How far this may go is somewhat uncertain, but a better demand and stronger prices appear to be fairly well assured for the next few weeks, or may be for a longer period if developments continue to be as favorable as they now promise to be. In some quarters strong claims are made as to Pig Iron, but in finished products there is not much said, except that Plates are in better demand and that Thin Sheets are remarkably well taken. Taking everything into account, however, there is no doubt that there is a distinctly improved outlook, and while it is not expected that prices will show much advance, it is believed that there will be a market at clearly defined rates, which has not been the case for several weeks past. The change of tone is due to several influences, such as a curtailment of output and decreased supplies on the one hand, and on the other increased requirements and improved prospects of demand during the fall months. The decline in prices has also been so great that consumers feel more confidence in values, and are of opinion that for a while at all events the chances of advance are better than for a decline. It is remarkable that this statement has not been made, and could not have been truthfully made, at any time during the year until now. There is little doubt, however, that even if there is no advance further declines are for the present almost out of the question.

**Pig Iron.**—The market has a decidedly encouraging appearance. Some good buying has been done during the past week, several of the lots being of considerable importance, and in all cases at better prices than seemed probable a week ago. Small buyers have also been picking up a good deal of material, so that order books are in better condition than they have been for a long while past. It will probably not be safe to assume that prices will be carried back to the figures of last fall, or even to those current two or three months ago, but it is recognized that to-day's prices are as low as can be expected.



considering the cost of production, and as stocks are small and consumption likely to be on a very liberal scale during the remainder of the year, it is safe to stock up for a period covering at least 60 or 90 days. It may be that lower prices will be seen later on, but even that will depend upon contingencies which have yet to be developed. The volume of business promises to be large, however, and as the export trade is again assuming important proportions, it is likely to be very efficient in preventing any serious shortage of employment. Nevertheless, there is but little prospect of being able to successfully operate furnaces for any length of time which cannot produce Iron at considerably less than to-day's prices. They may do so temporarily, but they will always be in danger of a decline, which will eventually leave them a long way in the rear. Present prices look low compared with last year, but they are high compared with an average of the previous five years, so that there can be no reason to doubt that prices will gradually, and in due course, get back to the old figures. The tendency of the age in all lines is to cheapen cost, hence \$10 to \$12 Pig Iron is only a question of time. For the present, however, the indications point to better prices as the natural outcome of a drop of \$5 to \$6 per ton during the past few months. Prices are steadier than they were, but are still difficult to quote with exactness, but in a general way \$16.50 for No. 2 X Foundry would be a fair average of to-day's market with some sales at more money, and some at a little less, the extreme range being as follows for tidewater or nearby deliveries: No. 1 X Foundry, \$17.50 to \$18; No. 2 X Foundry, \$16.25 to \$17; No. 2 Plain, \$15.75 to \$16; Mill Irons, \$14.25 to \$15; Ordinary, \$13.50 to \$14.

**Billets.**—There is a better market, and sales are being made at \$22.50 for fair sized lots. Buyers are cautious, however, and only take such lots as are likely to be needed in the near future.

**Plates.**—The demand for Plates is better than it has been for some time. Although the lots taken are (as a rule) not large, the aggregate is quite important. A few lots of 200 up to 600 and 800 tons have been placed, while the run for carload and similar quantities has been very encouraging. The chances now appear to favor a good fall trade, and it is expected that prices will show some improvement, but so far no distinct advance can be quoted on last week's prices, although the tone is undoubtedly firmer, as follows for nearby deliveries: Steel Plates, ¼-inch and thicker, 1.30c. to 1.35c.; Universals, 1.35c. to 1.40c.; Shell, 1.50c. to 1.55c.; Flange, 1.60c. to 1.65c.; Charcoal Iron Plates, C. H. No. 1, 2.40c.; Best Flange, 2.90c.; Fire Box, 3.40c.

**Structural Material.**—Plenty of figuring is going on for work which may be taken up in the near future, or which may go over until later in the season. Manufacturers say that in the matter of inquiries (which look like business) prospects are decidedly better, but they have not added much to their order books during the past few weeks. Mills are running as full as they can, considering the hot weather, but the output for the month will be very small compared with the earlier months of the year. Nominal prices remain as follows for seaboard and nearby points: Beams and Channels, 15-inch and under, 2.03c.; Angles, 3 to 6 inches, 1.93c.

**Bars.**—Business requires a good deal of forcing to induce large purchases. There are evidently too many mills in operation to permit satisfactory prices, which are now down to 1.30c. to 1.35c., at mill, for Refined Bars, and buyers claim that in some cases deliveries have been made to them at the figures named. There is a good deal of business one way or another, but the supply is rather too heavy, hence the weakness in prices.

**Sheets.**—Thin Sheets are extremely active, the leading local interests having all the orders they can fill for three or four months to come. Heavy Sheets are very dull, however. Prices remain as follows for best Sheets (Common Sheets two-tenths less): No. 10, 2.30c.; No. 14, 2.40c.; No. 16, 2.50c.; Nos. 18-20, 3c.; Nos. 21-24, 3.10c.; Nos. 26, 27, 3.20c.; No. 28, 3.30c.

**Old Material.**—There are some signs of improvement in the demand, although prices are still very irregular. Cast Borings have been sold at \$6.50, and are almost a drug on the market, while Machinery Cast is freely taken at \$13.50 to \$14. Heavy Steel Scrap is also wanted at \$11 to \$11.50, and Rails at \$13. Other descriptions dull and neglected. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, \$14 to \$15; No. 1 Yard Scrap, \$11.50 to \$12.50; No. 2 Light Scrap, \$10 to \$10.50; Machinery Cast, \$13 to \$14; Heavy Steel Scrap, \$11 to \$12; Old Iron Rails, \$15 to \$16; Old Steel Rails, \$13 to \$14; Wrought Turnings, \$8.50 to \$9; Cast Borings, \$6.50 to \$7; Old Car Wheels, \$17 to \$18; Iron Axles, \$15 to \$16; Steel Axles, \$16 to \$17.

The Energy Mfg. Company, Philadelphia, Pa., have changed the title of their firm to the Energy Elevator

Company, as being more appropriate, owing to the fact that the company now manufacture Elevators exclusively, whereas at the beginning of their career, in addition to Elevators they manufactured a number of different articles.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building.  
Pittsburgh, July 25, 1900.  
(By Telegraph.)

**Pig Iron.**—The market on Bessemer Pig Iron is almost lifeless, no business being reported except a few small sales of 25 to 100 tons at about \$16.50 to \$17, Pittsburgh. Much interest attaches to the meeting of the Pig Iron and Steel interests to be held in the offices of the Illinois Steel Company, Chicago, to-morrow (Thursday). The local and Valley furnace interests will be fully represented. Prices on Forge Iron are going down very fast, and local Standard Gray Forge has sold at \$15, delivered Pittsburgh. Foundry Iron is also declining, but there is a fair amount of inquiry. Local No. 2 Foundry has sold at \$15.75 to \$16 in good sized lots, and is held at \$16 to \$16.50 for small lots, f.o.b. Pittsburgh. We quote Bessemer Iron at \$16 to \$17, Pittsburgh, in small lots. Were there any large lots offering it is certain that this price could be shaded perhaps a couple of dollars a ton. Local Forge Iron is \$15 and Southern Forge about \$14.50, Pittsburgh. No. 2 Foundry is \$15.75 to \$16 in small lots. We note a sale of local Forge Iron at \$15, delivered Pittsburgh.

**Billets.**—The Steel market is very quiet and hardly enough Steel is being sold to establish a price. The Steel interests meet in Chicago to-morrow (Thursday). We quote Bessemer Billets at \$19, maker's mill, Pittsburgh, but it is likely on a desirable specification and firm offer this price could be shaded. Open Hearth Billets are quoted all the way from \$21 to \$23 or \$24, depending on specifications and carbons.

**Sheet Bars.**—Prices continue to decline. Sheet and Tin Plate Bars cut to length have sold at about \$23, Pittsburgh, and it is intimated that this price has been shaded. Long Bars, random lengths, are offered at \$22, Pittsburgh, or less.

**Iron and Steel Scrap.**—The shut down of all the mills of the Republic Iron & Steel Company and the American Steel Hoop Company has cut off nearly all consumption of Scrap. On the few sales being made buyers are able to get very low prices. Cast Iron Borings have sold at \$6 a ton, delivered Youngstown. Old Iron Rails are offered at \$14.50 a gross ton, and Old Steel Rails for remelting have sold at \$11 a gross ton.

(By Mail.)

A call has been made for a meeting of all the leading Pig Iron and Steel interests, to be held in the offices of Judge Gary of the Federal Steel Company in "The Rookery," Chicago, on Thursday, July 26. The item of interest in the Iron trade this week is the fact that a strike is on in the Bar Iron mills, with a probability that they will be idle for some time. The two concerns affected most are the Republic Iron & Steel Company, controlling about 36 Bar mills in the Central West and South, and the American Steel Hoop Company, owning some 13 or 14 plants. The Amalgamated Association have refused to give the Wage Committee power to change the scale as adopted at Indianapolis and the manufacturers have refused to accept it. The scale calls for an advance of 50c. a ton in boiling, or to \$5.50 a ton, based on a 1½c. Bar Iron card. With the slump that has come in prices of Iron and Steel Bars, and the very low figures at which a limited tonnage is being entered by the mills, the demand of the Amalgamated Association at this time for an advance in wages is nothing short of absurd. The manufacturers will certainly persist in their determination not to pay higher wages at this time. Generally speaking, conditions in the Iron trade are showing some improvement in the direction that there is a very much better inquiry and a good deal of tonnage, particularly in Steel Bars for agricultural interests, has been placed. In fact, several of the leading mills advise us that their order books are in very much better shape than for several months, and with tonnage already booked and contracts under negotia-

tion the outlook has improved considerably. This tonnage has been taken, it is true, at low figures, but it proves the statement made in this report a number of times that just as soon as prices get to a point where buyers thought it safe to take hold there would be lots of business. There has also been some business in Plates on basis of about 1.10c. at Pittsburgh. In Pig Iron and Steel some low prices have been made, but without bringing out any tonnage of consequence. There is absolutely no demand for Bessemer Iron, but Bessemer Billets have been offered at \$19, maker's mill. There has also been some tonnage in Sheet Bars, prices ranging from \$21 or less up to \$23, the latter price for Light Bars cut to length. Finished Material, aside from Bars and Plates, is quiet, but there is more inquiry, with a probability that tonnage will soon pick up. Should the Bar mills remain idle for any considerable time an advance in the price of both Iron and Steel Bars is not out of the question.

**Ferromanganese.**—The local interest continues to quote 80 per cent. Ferro at \$85, delivered.

**Rods.**—We understand that Bessemer Rods have been quoted under \$30, f.o.b. Pittsburgh. An item of interest in this connection is that the Carnegie Steel Company are going into the manufacture of Rods on an extensive scale.

**Bars.**—The center of interest in the Iron trade just now is Steel Bars, in which there is more doing than in anything else. In the past two or three weeks a very large tonnage in Steel Bars has been sold to the agricultural people and other consumers, and large contracts for additional tonnage are pending. Based on costs of Ore, Coke, Pig Iron and Steel, prices on Steel Bars are certainly close to cost, if not at cost altogether. Prices at which this large tonnage of Bars was taken vary some, but a good deal was placed at 1.10c., maker's mill. In some cases this price was shaded \$1 or so where large lots were involved and for prompt shipments. The general market on Steel Bars is 1.10c. to 1.15c., but to a large buyer who would make a contract for a heavy tonnage and for prompt shipment our lower price would be shaded. Most of the mills rolling Iron Bars are idle, the Amalgamated Association having refused to reduce their scale and insisting upon the advance called for in the scale adopted at Indianapolis. This scale is based on Iron Bars at 1.50c. minimum and \$6 a ton for boiling, but this price on Bars is fully \$5 a ton above the market, and to ask an advance at this time is ridiculous. The mills will be allowed to remain idle a long time before the demand for higher wages is granted. In the meantime stocks of Iron Bars are light and prices are perhaps a trifle stronger. We quote Iron Bars at 1.30c. to 1.35c., f.o.b. Pittsburgh, in carload lots. For contracts involving large tonnage the lower price would be shaded.

**Structural Material.**—There is nothing of interest to report. The material for the New York East River Bridge held over is to be let on August 9. There is a good demand for bridge work and the mills rolling Structural Steel are fairly well employed. We quote as follows: Beams and Channels up to 15-inch at 1.90c.; over 15-inch, 2c.; Angles, 3 to 6 inch, inclusive, 1.80c.; over 6-inch, 1.90c.; under 3-inch, 1.60c. to 1.70c.; Zees, 1.90c.; Tees, 1.95c.; Bars, 1.40c.; Universal and Sheared Plates, 1.25c. to 1.30c., all f.o.b. Pittsburgh.

**Plates.**—Demand for Plates is better, being stimulated considerably by the very low prices ruling. With Billets at \$19 or thereabouts and Sheared Plates at 1.10c. and lower, it would seem that prices have about touched bottom. The market on Sheared Plates, ¼-inch and heavier, is 1.10c. to 1.15c., but in exceptional cases and for large tonnage our lower price has been slightly shaded. We quote Shell at 1.20c. to 1.25c.; Flange, 1.30c. to 1.35c.; Fire Box, 2.25c. to 3c.

**Sheets.**—There is a fair demand for Sheets in small lots, but not as heavy as some time since. Prices being quoted on Black Sheets show a wide range, and on No. 27 as high as 3.15c. and on No. 28 3.20c. is being quoted. These prices, however, are being shaded by jobbers, and a few mills are quoting 2.95c. to 3c. for No. 27 and 3c. to 3.05c. for No. 28. The demand now is principally for Corrugating sheets. There is a much better demand for Galvanized Sheets than for Black and a moderate tonnage is being placed. We quote Galvanized Sheets at 70, 10 and 2½ per cent., 15c. freight. For very desirable orders and for prompt shipment it is possible this price on Galvanized might be slightly shaded.

**Merchant Steel.**—Business is very light, few orders being placed, and these only for small lots. Details of the organization of the Crucible Steel Company of America are to be closed up at a meeting to be held in Pittsburgh Wednesday, July 25. We quote nominally as follows: Tire Steel, 1.75c. to 1.80c.; Toe Calk, 1.85c. to 1.90c.;

Open Hearth Basic, 2.25c. to 2.35c.; Plow Slabs, 1.80c. to 1.90c.; Rolled Lay Steel, 2.75c.; Hammered Lay Steel, 3.10c. to 3.25c.; Tool Steel, ordinary grades, 7c. and upward, depending on quality. Terms are 60 days, 2 per cent. off for cash in 10 days, and on Tool Steel 25c. freight is allowed. As noted last week, the above prices would be materially shaded on attractive orders.

**Skelp.**—There are inquiries in the market for two or three moderate sized lots of Skelp and some low prices are being made. The market is nominally 1.25c., at mill, for Grooved and Sheared, but on a firm offer and for desirable sizes it is probable 1.15c. could be done.

**Pipes and Tubes.**—There is a fair demand for Tubular Goods, but mostly for small lots. Prices are better sustained than for some time, only occasional cutting being reported. To consumers in carload lots we quote:

Merchant Pipe.		
	Black. Per cent.	Galvd. Per cent.
½ to ¾ inch and 9 to 12 inch.....	63	50
¾ to 8 inch.....	68	55
Casings.		
		S. & S. Per cent.
2 to 2¾ inch.....		42
3 to 4½ and 7½ to 12½ inch.....		56
4¾ to 7¾ inch.....		60
Boiler Tubes.		
	Up to 22 feet. Per cent.	22 feet and over. Per cent.
Steel.		
1 inch to 1½ inch and 2½ inch.....	50	45
1½ to 2¼ inch.....	42	36
2½ to 13 inch.....	55	50
Iron.		
1 inch to 1½ and 2½ inch.....	45	40
1½ inch to 2¼ inch.....	40	34
2½ inch to 13 inch.....	52½	47½

The above prices are to consumers, prices to jobbers being about 5 per cent. less.

**Coke.**—Last week Coke production in the Connells-ville region increased slightly. Out of 20,420 ovens 16,099 were active and 4321 idle, the output having been 169,066 tons, an increase over the previous week of 7710 tons. Demand for Coke continues exceedingly quiet, and, with the probability of further shut downs among the blast furnaces and Bessemer plants, a further decrease in demand for Coke is probable. There is no demand for Furnace Coke, but for strictly Connellsville from \$2 to \$2.50 a ton is asked. However, there is no new business being placed. There is a little better demand for Foundry Coke, but it is also very quiet. We quote strictly Connellsville 72-hour Foundry Coke at \$2.75 a ton, at oven. For main line Coke lower prices than the above are being quoted.

## Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, {  
CINCINNATI, July 25, 1900. }

The Pig Iron market is still in a very unsettled and unsatisfactory condition. Dealers and consumers alike are all at sea as to values. There is a feeling growing more pronounced that prices cannot go much lower without hurting every branch of the business. It is also believed that it will only require a few good sized orders to give the much longed for steadiness to the situation. There has been but little trading throughout the week, with perhaps an increase in the volume of inquiries. Prices generally have settled at least 50c., and there are rumors that several furnaces have signified a willingness to go still below the minimum herewith. Freight rate from Birmingham is \$3.25 to this point, from the Hanging Rock district \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$17.00 to \$17.50
Southern Coke, No. 2.....	16.00 to 16.50
Southern Coke, No. 3.....	15.00 to 15.50
Southern Coke, No. 4.....	13.50 to 14.00
Southern Coke, No. 1 Soft.....	17.00 to 17.50
Southern Coke, No. 2 Soft.....	16.00 to 16.50
Southern Coke, Gray Forge.....	13.50 to 14.00
Southern Coke, Mottled.....	13.50 to 14.00
Ohio Silvery, No. 1.....	..... to 23.50
Ohio Silvery, No. 2.....	..... to 22.50
Lake Superior Coke, No. 1.....	..... to 17.50
Lake Superior Coke, No. 2.....	..... to 16.50
Lake Superior Coke, No. 3.....	..... to 15.50

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling grades.....	23.00 to 23.50
Standard Southern Car Wheel, No. 2.....	22.00 to 22.50
Lake Superior Car Wheel and Malleable.....	..... to 23.75

**Plates and Bars.**—The better feeling continues to be manifest and there has been a fair trade, all circumstances considered. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 1.60c., with half extras; in small lots, 2c., with full extras; Bar Steel, carload lots, 1.70c., with half extras; small lots, 2c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 1.75c.; small, 2.25c.; Sheets, No. 10, 2.25c.; No. 27, Steel, 3c.; Plates, 2c. to 2.25c.



## Cleveland.

CLEVELAND, OHIO, July 24, 1900.

**Iron Ore.**—The transportation of Iron Ore from the Lake Superior district to Ohio ports is rapidly ceasing to be a factor in the making of freights on the lakes, at least for the present. During the week the shippers in Cleveland have received orders from the mines to stop the movement of wild Ore, as their proportion has been fulfilled. Since the opening of the season of navigation, and especially since the tying up of the Rockefeller fleet, the movement of wild Ore down the lakes has been free and undisturbed, save for the temporary withdrawal of the larger vessels from that trade. During that period, which was of short duration, the shippers were compelled to rely upon the smaller boats and the contract tonnage to move their Ore. For the most part, however, the larger boats have been ready and anxious to carry Ore at the prevailing rates, and in accordance the shipment has been large. It was known that Ore had been shipped down the lake in much larger quantities so far this year than ever before, but the shippers hardly expected that they had reached the climax of the wild movement. This has had a disastrous effect on the carrying rates. There are a large number of vessels that are desirous of getting Ore cargoes, and as these are limited the shippers are about in a position to dictate terms. So far no change has been seen in the rates, but if any business was moving it would not be a hard matter for the shippers to force a break. The quotations still are \$1 from Duluth, 90c. from Marquette and 70c. from Escanaba, although it is conceded that these rates mean little or nothing. The decision of the Ore Association to maintain the prices which prevailed last year was not received with any great amount of favor among the Pig Iron men. The association is acting regardless of others, considering only the interests of its members, remembering in the meantime the circumstances of a year ago. Then they were selling Ore at \$2.25 and \$2.50 a ton, and were losing on it, the price never being advanced until January 1, 1900. As a consequence of the price which prevailed last year and the excessively high freights on the lakes, few if any of the mines paid running expenses, and the most of them lost money. Now the Ore men propose to get back some of the money they lost, and are notifying the Pig Iron men, through their decision, that they need expect no favors this year in the way of prices, as none will be granted. This situation has been rather surprising to the Iron men, and has had the effect of precluding the possibility of much business being done.

**Pig Iron.**—The business for the last half of this year is still in an embryonic state. It had been expected that before this time some of it should develop, but all hope of that has been abandoned now until a settlement of the strike among the molders. All of the foundries in this district making machine castings are shut down, hence little or no Pig Iron is being consumed. The malleable foundries are still working, in a limited number of cases, but they are not doing much business. These have started up since their invoice, but have hardly been put into working order as yet. New entanglements in the relations with the molders are coming out, and it seems as if the fight is to be long drawn out. The molders now would be satisfied, seeing the trend in the Iron market, to go back to work at the old prices, but the furnacemen will not consent, but demand that certain reductions be made. It will likely be a long time, therefore, before the condition of things changes any. Just now the sales agents are taking it easy. The sales have been cut down almost to the minimum, and the prices vary greatly. The feeling in the trade is that the action of the Ore Association in holding up the prices to what they were last year will have a bracing effect upon the price of Pig Iron. Recent reductions have been made with a view to the possibility of the price of Ore dropping with the other market prices. This being no longer a probability the Pig Iron men have something substantial to figure on. This will affect, most likely, the aspect of the entire market, and that at once.

**Finished Materials.**—This has been a big week for business. The sales have been very heavy, and the inquiries have indicated that it is not to stop at once. The interest in Bars continues as it has been. One week ago it was stated that Bars had been livelier than at any time previously this year. This state of affairs has continued this week, and the sales have shown that the amount of business done is ever far in excess of the week before, therefore being the largest of the year. The price of Bars and Plates has been low, which probably had something to do with the bidding, the impression being that rock bottom has been reached. On both of these grades 1.15c. has been quoted. Aside from

increasing the volume of business noticeably the lowering of the prices has had the effect also of squeezing out of business some of the smaller mills, able to live only under such conditions as will keep the price of Finished Material at the very top notch. Notice has been received that a number of these small concerns have decided to quit business entirely. The Structural Iron market holds firm. This week the Wheeling & Lake Erie placed orders for its new bridges with the Toledo Bridge Company. The jobs will require 1000 tons of Steel. This was the biggest order of the week. There has been some talk of a reduction in the price of the smaller Angles, but this emanates from a source outside of the mills in the agreement, and they are paying no attention to it. It is a fact, nevertheless, that some quotations of the smaller sizes of Angles have been made as low as 1.50c. The week has seen a good inquiry for Billets, and sales have been made on the basis of about \$21.50. In addition to these the market has an inquiry for 1000 tons of Bars. The order has not been placed.

## Birmingham.

BIRMINGHAM, ALA., July 23, 1900.

To use the expressive phrase of one of our Iron magnates, the Iron market has been a very ragged one and it is ragged yet, though it is settling to a basis that is considered safe. The feeling is that there is small probability of a decline below \$1 lower, which would bring this district to a parity with other competing districts. The price for the same grade of Iron has run the gamut of changes all through the variations of \$1.50. No. 2 Foundry, for instance, has sold all the way from \$14.50 to \$13, and even at the latter price there have been declinations of the product. No. 4 Foundry was sold at \$12.25, and from that down to \$11.25, and offerings at the latter price were declined on the ground that districts east of us were beating that figure. Some Silver Gray went at \$15.75, but only in a small way. That grade is as erratic in price as is the demand, which cannot be anticipated.

The price seems to be governed by the individual necessities of the buyers. All have been grabbing for business, which indicates the feeling that a lower level of values is anticipated. One encouraging feature in the situation is that large interests which have persistently held out of the market are now coming into it with inquiries and have taken limited quantities at accepted concessions in prices. They stand ready to increase these holdings when they think prices are rock bottom. Said a leading furnaceman to your correspondent, "I can't say that I think we are on bottom, but I can say we are not far from there. It may require a further decline of \$1 to put us on a basis that would be attractive to buyers. If necessary we will meet the market at the decline and feed the wants of the buyers. We have unlimited faith in a reaction being near at hand. The export trade at the prices indicated would come in freely and take our surplus."

As an instance of excessive variation in price an inquiry came in for a certain grade, which was promptly answered naming figures that were considered as sure to secure the order. The reply came promptly, "You are just \$2 too high." While low prices were made on low grades telegrams indicated a demoralization in districts east of us much worse than prevailed here. The truth is no one here has attempted to set the pace for prices. There has been no necessity for it. We have just followed the trend of events and have been selling some of the other fellow's Iron who could not or would not take it when tendered to him.

As to the export trade, it is very fair. One firm worked orders for 7000 tons in one day. Other firms have been equally fortunate in securing foreign favors. So that, summing up the foreign business for the week, it will cover full 40,000 tons. Your correspondent is not permitted to mention grades nor ports to which purchases go. There is a great deal of jealousy concerning these export orders and it is very hard to secure particulars of interest.

One thing that is greatly bothering the sellers is not the difficulty of delivering sales, but the difficulty of making buyers accept sales. When the market is against the seller he must stand to the rack and munch his medicine. When it is against the buyer it was entirely unexpected and unprovided for. So the seller stands in the gap, protects the buyer and sacrifices himself. He should never make a sale without a guarantee of protection.

The Steel mill concerning whose shut down mention has been made is being prepared for the renewing of operations by August 1.

Just how or just why it is cannot be stated, but there is a feeling that the depression has about reached the bottom and that we are on the upward tendency again.

Certainly there has been no diminution in the fathering of enterprises in the district that require both brains and money.

### St. Louis. (By Telegraph.)

Office of *The Iron Age*, 1305 Chemical Building, {  
St. Louis, July 25, 1900. }

**Pig Iron.**—The market is still in a transitory condition and apparently bottom has not been touched. Prices below show reductions of 50c., but the quotations may still be considered normal. An order of the right size would without much doubt be taken at a concession. Rumor has it that No. 2 Foundry could be secured at \$13, Birmingham. Very little business is heard of and inquiries which do bear fruit are for one or two carloads only. It is significant that after quotation is had the matter is closed by wire. There seems to be comparatively little iron in consumers' yards and present orders specify speedy shipment. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$18.00 to \$18.25
Southern, No. 2 Foundry.....	17.00 to 17.25
Southern, No. 3 Foundry.....	16.00 to 16.25
No. 1 Soft.....	18.00 to 18.25
No. 2 Soft.....	17.00 to 17.25
Gray Forge.....	15.00 to 15.25

**Bars.**—There is a better tone prevalent this week. One of the conservative jobbers considered that bottom had been reached and backed up his judgment by placing orders for round lots. As compared with last week, mill prices are easier. Iron in large tonnage is quoted 1.50c. and Steel 1.40c., half extras. Store prices are unchanged at 1.75c. to 2c., full extras.

**Rails and Track Supplies.**—The week has proved rather quiet. No buying has apparently involved more than ordinary wants. We quote Splice Bars, Iron or Steel, 1.90c. to 2.25c.; Track Bolts, with Square Nuts, 2.55c. to 2.70c.; with Hexagon Nuts, 2.70c. to 2.80c.; Spikes, 2c. to 2.10c.; Links and Pins, 2c.

**Pig Lead.**—Market dull and uninteresting. Tonnage movement is quite light. Prices are unchanged as follows: Soft Missouri, 3.90c.; Desilverized, 3.95c. Lead Ore sold at \$43 per ton.

**Spelter.**—There was some excitement since our last report, caused by labor differences at Le Harpe. The plant is now understood to be running and speculative interests are no longer in evidence in the market. Prices had in the meantime reached 4.25c., but the nominal price to-day is 4.12½c. Smelters are not showing any anxiety to effect sales, but there is still a downward tendency in prices. Zinc Ore experienced higher values, \$28 having been the top price.

## The British Iron Market.

**Pig Iron.**—There has been a better tone in the market during the past week, and buyers show more disposition to operate. As regards warrants, there is practically nothing doing in the Cleveland district, and yesterday they were not quoted on 'Change. It is reported, however, that 69 shillings have been paid for them during the week. In Glasgow there have been some marked fluctuations, Warrants dropping from 69 shillings 4½ pence to 66 shillings 11½ pence, and subsequently recovering to 69 shillings 10 pence, or nearly 3 shillings more than last week's quotation. These movements, however, have not affected makers' prices to any extent, although Carron Iron has been reduced, No. 1 to 85 shillings 6 pence, and No. 3 to 75 shillings 6 pence. In the Cleveland district the Glasgow market and its vagaries have been entirely ignored, and quotations have remained very steady. Producers have plenty of orders in hand, and they are apparently able to hold their own, stocks in public stores being very small, and holders thereof being disinclined to sell under present circumstances. The general price of No. 3 Cleveland G.M.B. Pig Iron, for early delivery this week, has been 68 shillings 6 pence to 69 shillings, the latter price being the more representative figure at the end of the week. Makers of Hematite are busy, and 86 shillings has to be paid for mixed numbers.

**Manufactured Iron and Steel.**—The finished branches continue well employed in completing arrears of work, and, although new business is not coming forward very freely just now, makers still have sufficient on their books to put them in a position to resist the persistent attempt of customers to get orders accepted at reduced rates. The requirements of consumers during the ensuing quarter are considerable, judging by the inquiries to hand, but they hesitate to conclude bargains at the present figures, and will no doubt hold off until they are able to see with some amount of certainty what the

future course of prices will be. In South Staffordshire, however, the Marked Bar houses are doing a steady business at their full rate of £11 10s., but makers of Common Iron have more difficulty in getting the list price, being offered, but rarely accepting, £10 5s. Steel makers have a good deal of work on hand. Bars, Plates, Angles and Billets are in good demand.

**Engineering and Shipbuilding.**—There is no material change to report. Orders in hand still keep most of the leading branches fully engaged, but new work is not coming forward in quantities sufficient to replace what has been completed and delivered. In one or two important sections, however, the outlook would seem to be quite as satisfactory as ever, and this is especially the case as regards builders of all descriptions of railway rolling stock and plant. On the other hand, the textile machine trades are undoubtedly becoming quieter. The shipbuilding yards are fairly busy. Hartlepool builders launched 51,997 tons during the first six months of the year, as compared with 69,800 tons for the initial half year of 1899, while the corresponding figures for the Tees and Whitby are 70,615 and 76,074 tons respectively.

**Foreign.**—In France the demand for Rolled Iron continues to be strictly limited to pressing needs, but prices have been put up a little owing to the increasing cost of fuel. On the Belgian market prices continue on a downward grade. A good many of the mills and forges in the Charleroi and Liege districts are running short time, and as the consumption of crude metal is diminishing, larger quantities are now available. There has been a little more active demand for most descriptions of Rolled Iron in Germany. The contracts already entered into are sufficiently heavy to keep manufacturers fully employed until the end of the year, and in many cases even over the first quarter in 1901.

**Comparison of Prices.**—The annexed table shows the current prices compared with those of last week, and the corresponding period last year:

	July 12, 1900.	July 5, 1900.	July 13, 1899.
<b>Iron Ore—</b>	s. d.	s. d.	s. d.
Rubio, Middlesbrough.....	21 6	21 3	17 0
Rubio, Cardiff.....	20 6	20 6	15 9
Pottery Mine, North Staffordshire.....	20 6	20 6	14 6
Hematite, West Coast (at mines)....	17 6	17 6	16 0
<b>Pig Iron—</b>			
No. 3 Foundry, Middlesbrough.....	69 0	69 0	71 0
Warrants.....	69 0	69 0	71 2
Scotch Warrants, Glasgow.....	69 10	66 11½	71 0
Hematite Warrants, West Coast.....	83 6	83 0	73 0
Cold Blast (Foundry), South Staffordshire.....	130 0	130 0	110 0
Welsh Hematite, Cardiff.....	90 0	90 0	75 0
<b>Manufactured Iron and Steel—</b>	£ s. d.	£ s. d.	£ s. d.
Marked Bars, South Staffordshire.....	11 10 0	11 10 0	9 0 0
Common Bars.....	10 15 0	10 15 0	8 0 0
Steel Rails, Middlesbrough.....	7 12 6	7 12 6	5 7 6
Steel Rails, West Coast.....	7 7 6	7 7 6	5 7 6
Steel Rails, Cardiff.....	7 5 0	7 5 0	5 15 0
Steel Angles (eng.), Middlesbrough.....	8 15 0	8 15 0	7 2 6
Steel Angles (eng.), Glasgow.....	8 5 0	8 5 0	7 0 0
Steel Plates (ship), Middlesbrough.....	8 7 6	8 7 6	7 10 0
Steel Plates (ship), Glasgow.....	8 7 6	8 7 6	7 10 0
<b>Tin Plates, Bessemer IC Cokes, South Wales.....</b>	s. d.	s. d.	s. d.
	15 3	15 3	15 3

—*The Iron and Coal Trades Review, London, July 13, 1900.*

## The German Iron Market.

ESSEN, July 11, 1900.—It is difficult to render a clear perception of the present condition of the Iron market. The great industries are in excellent condition; they are not only kept sufficiently busy in the different branches, but there are so many specifications on hand that an active and good trade is assured for many months to come. The large works are well supported by orders for Rails, Sleepers and other material for the State and other railroads. In fact, the orders have been so important that the Prussian State Railway had to postpone the term of delivery from May 1, 1901, to a date late in the fall. The smaller manufacturing industries are also well occupied. Some branches, however, which produce rolled specialties, Iron Bars, Sheets, &c., are complaining of the want of sufficient orders, and for reasons which are easily explained. The uncertainty of political relations naturally makes enterprise careful and hesitating, and consequently the interrupted demand will be first felt by works that turn out only certain specialties.

Certain circles are still harping on the bugbear of American competition, which for the present has no bearing on the subject of the firmness of the Rhenish-Westphalian industrial market. Let us here again point out the difficulty to effect regular shipments of American Pig Iron to Germany. The first difficulty is the German tariff of 10 marks per ton; second, American Pig Iron can only be introduced simultaneously with cotton, and therefore a regular and continuous influx could not be counted upon, which certainly is an indispensable condition. In addition to tariff and ocean freight there is the



cost of transportation from ship to point of destination, which would run up expenses to from 35 to 45 marks per ton. This demonstrates how much lower American prices must go before our important German consumers can give it serious consideration.

The Ore market has suffered no material change since our last report; supplies are regular and in keeping with the wants of the blast furnaces. Sales of Pig Iron have somewhat lessened of late, but this may be traced to the customary July stock taking. It is well known that there are still requirements of Thomas Basic Pig to be covered and that they will have to be supplied from foreign sources. On the whole the Pig Iron industry has been very busy, and foundries especially have been good buyers. The former scarcity of Steel material is now at an end and is not expected to occur again. The rolling mills can easily obtain Billets and have in some instances been able to put in a supply. The same may be reported of Muck Bars, which are wont to be scarce in summer. The market for Rolled Iron has been quiet since the American crisis. Owing to a feeling of uncertainty specifications are scarce; only most urgent needs are being covered. But what is wanted by dealers is very pressing and shows that there is a demand, only held back by existing conditions. This may be due to some extent to former prices, which rose too rapidly, and therefore consumers are now showing more precaution in buying.

Iron Bars, which usually were scarce, are very quiet, selling at 205 marks per ton for best quality; Soft Steel at 180 to 185 marks.

So far as Bands are concerned the market is quiet, but prices are unchanged at 195 to 197.50 marks per ton. The condition of the Plate mills is very satisfactory, the demand for Ship and Tank Plates being large. The Sheet mills have a less satisfactory position to report, and the formation of the Sheet syndicate is slower in materializing than had been expected.

The Tube works have reduced their prices by raising their discounts 5 per cent., owing to the enormous increase in production by the many new mills that have started up, and the supply at present is greater than the demand.

The Rod mills are fairly busy. The sale of Drawn Wire is quiet, as the news from China is unfavorable. The sales of Wire Nails are not brisk, either for home use or for export; dealers having bought heavily and more than they really needed, are now filling orders from stock and only buy sparingly.

The railroad car works are very busy and the outlook for the future is excellent. The last orders received from State railroads will keep them busy until next spring. The machine shops, especially the Iron foundries, are extremely busy and are not in the least affected by the present quiet condition of the market.

The position of the Coal and Coke market remains the same as last reported and continues favorable. The demand for Coal is still in excess of the supply, although the latter is increasing from month to month. Consumers generally complain of insufficient receipts. The lots that remained without takers after the July inventory was taken were easily disposed of to other parties. It may be safely stated that as autumn approaches and Coal for domestic purposes will be needed, the demand cannot be met, as the continued scarcity of labor will prevent an increased output.

The demand for Coke is not as lively as it has been and the market has shared somewhat the general quiet tone of the Iron industry. Still there is sufficient demand to take up all the increased production of the newly started Coke plants.

## New York.

Office of *The Iron Age*, 232-236 William street, }  
NEW YORK, July 25, 1900. }

**Pig Iron.**—Domestic business is painfully small. Some demand is noted for small lots for immediate shipment, and a few inquiries are being received for round lots, but negotiations are long drawn out, and buyers hesitate to close as long as they see prices continuing to decline. Quite large sales have been made, principally of Southern and Virginia Iron, for export to England, Holland and Australia. Prices show a further decline. Our quotations represent a fair average of the market, but the fact should be noted that special brands which are wanted for mixture in some instances command better prices. Quotations are as follows at tidewater: Lehigh, Schuylkill and Virginia Irons, No. 1, \$17 to \$18; No. 2 X, \$16 to \$17; No. 2 Plain, \$15 to \$16; Gray Forge, \$14 to \$15. Tennessee and Alabama brands, No. 1 Foundry, \$18.50 to \$19; No. 2 Foundry, \$17.25 to \$17.75; No. 1 Soft, \$18.50 to \$19; No. 2 Soft, \$17.25 to \$17.75; No. 3 Foundry, \$16 to \$16.50; Gray Forge, \$15 to \$16.

**Steel Rails.**—The only transactions reported for the past week are in Steel Rails held in store by banking

interests. One lot of 10,000 tons held in store in New York for quite a long time has finally been disposed of at considerably under the mill price. Manufacturers continue to quote \$35 at mill in Eastern Pennsylvania for Standard Sections. Spikes are held at 2.10c. to 2.20c.; Splice Bars, 2c. to 2.20c.; Square Track Bolts, 3c. to 3.10c.; Hexagonal Track Bolts, 3.10c. to 3.20c.

**Cast Iron Pipe.**—Nothing new has developed in this branch of trade. The demand is still confined to small lots, which are quoted at tidewater at \$27 to \$27.50 for 8-inch Pipe. These prices would be shaded on good quantities.

**Finished Iron and Steel.**—A great deal of bridge work has been taken by the leading interest during the week. Orders for bridges have been received from all over the country. Buildings involving 12,000 tons or more are about ready to be placed, but contracts are deferred for various reasons. The approaches to the East River Bridge, which will be let on the 6th prox., constitute the largest piece of work now in sight. The demand for Plates is fairly good, running probably a little better than usual at this season, but prices are drooping, owing to the competition among manufacturers, which seems to be particularly sharp from Pittsburgh. Good inquiries for export are now under negotiation. We quote as follows at tidewater: Beams, Channels and Zees, 2.05c. to 2.15c.; Angles, 1.95c. to 2.05c.; Tees, 2.10c. to 2.20c.; Bulb Angles and Deck Beams, 2.35c. to 2.45c.; Universal Mill Plates, 1.30c. to 1.40c. Sheared Steel Plates are 1.30c. to 1.40c. for Tank, 1.40c. to 1.50c. for Shell, 1.50c. to 1.70c. for Flange, 2.10c. to 2.30c. for Fire Box, 3.50c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are held at 2.40c. for C. H. No. 1, 2.90c. for Flange, and 3.40c. for Fire Box. Refined Bars are 1.35c. to 1.40c.; Common Bars, 1.30c. to 1.35c.; Soft Steel Bars, 1.30c. to 1.40c., and Hoops, 2.25c. to 2.35c., base, on dock.

**Old Material.**—Large quantities of Old Rails, aggregating 8000 tons of Steel and 7000 tons of Iron, were offered the past week by leading Eastern railroad companies, but the bids received were so unsatisfactory that no sales were made. A lot of 1500 tons of Old Steel Girder Rails for import is also being offered in this market. It is exceedingly difficult to quote prices, but the range on Old Iron Rails would probably be \$12 to \$14, and on Old Steel Rails, \$11 to \$13. Other classes of Old Material are in practically no demand. No. 1 Railroad Scrap is offered at \$15.

## Metal Market.

Office of *The Iron Age*, 232-236 William street, }  
NEW YORK, July 25, 1900. }

The week under review has been an extremely quiet one in every branch of the metal trade. Very little business was transacted, as consumers appear to still feel that the time for engaging ahead has not arrived. The situation in China has not yet had any but a disquieting effect. As to the effect on the Copper trade, certain parties view the situation with apprehension, as they state that plans for the extension of trolley road and electrical systems will be laid aside indefinitely, thus placing out of the question anticipated demand for Copper Wire and electrical goods. On the other hand, it is said that there will be large purchases by the European governments for military purposes. This, however, is said to be insignificant as compared with demand which has been checked. The fact that so slight a disturbance was made on the London 'Change as a result of the war news is taken as a good sign. The London operators are most sensitive as to political movements, and although the present trouble has assumed evil proportions, it has passed the London traders practically unnoticed.

**Pig Tin.**—The sensation of to-day is what has been termed the collapse of the spot corner. While early in the week 35c. was paid, retail lots were to-day offered for 34c., with 32½c. as the highest bid received. We should say that the market to-day is not above 33½c. in a retail way. Business has narrowed down to the smallest retail proportion, as buyers of round lots do not exist at this time. Futures are entirely nominal, as there are no buyers, and we hear that September and October Tin can be secured at 30½c. Arrivals here and at nearby ports amount so far this month to 675 tons, but 935 tons are due between to-day and Saturday. The regular Banca sale will be held to-morrow, at which about 2300 tons will be sold. London closed to-day £143 15s. for spot and £139 for futures. It will be observed that the backwardation amounts to but £4 15s., while last week it amounted to £7.

**Copper.**—Efforts are doubtless being made by merchants to stiffen the situation, as opinions on all sides indicate belief in a stronger market. Consumers do not seem to respond, however, and the result is a good deal

## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JULY 25, 1900.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
\$29,000,000	Am. Car & Foundry, Common...	1,680	-14½	.....	-15	15½-15½	-15½	15½-15½
29,000,000	Am. Car & Fy, Pref. (7½ Non-Cu.)	955	.....	61 -63	-63	.....	-64	63½-64
19,000,000	Am. Steel Hoop, Common...	9,825	19½-22	21½-22½	21½-22½	22½-23½	21½-23	21½
14,000,000	Am. Steel Hoop, Pref. (7½ Cu.)	900	68 -71½	.....	71 -72	70 -71	.....	.....
50,000,000	Am. S. & W., Common...	65,819	32 -33½	33½-34½	34½-35	34½-36½	34½-36	34½-35½
40,000,000	Am. S. & W., Pref. (7½ Cu.)	6,477	72½-73½	73½-75	74½-74½	74½-75½	73½-74½	73½
28,000,000	Am. Tin Plate, Common, N. Y.	7,514	21½-23½	22½-23½	23 -24	24 -24½	-23	-23
15,325,000	Am. Tin Plate, Pref., N. Y. (7½ Cu.)	1,291	79 -80½	.....	.....	-79	.....	.....
7,500,000	Bethlehem Iron†	50	.....	-57	.....	.....	.....	.....
15,000,000	Beth. Steel, Par \$50, \$1 paid in...	1,809	-15	15 -15½	15½ 15½	.....	-15	14½-14½
7,974,550	Cambria Iron, Phila*	2	.....	.....	-44	.....	.....	.....
16,000,000	Cambria Steel**	9,987	16½-16½	16½-17½	17½-17½	17½-17½	16½-17½	-16½
11,000,000	Col. Fuel and Iron...	11,230	33 -33½	33½-34½	34 -34½	34½-36	34½-35½	33½-34
46,484,300	Federal Steel, Common...	31,995	32½-33½	33½-34½	34½-34½	34½-36	34½-35½	33½-34½
53,253,500	Federal Steel, Pref. (6½ Non-Cu.)	9,531	65 -66½	66 -67	67 -68	67 -68	67 -68	66½-67
32,000,000	National Steel, Common, N. Y.	9,480	23½-25	25 -26½	26½-26½	26½-27	25½-26½	-25½
27,000,000	Nat'l Steel, Pref., N. Y. (7½ Cu.)	810	-84	-84	.....	-84½	-85½	.....
40,000,000	National Stl. Tube, Common, N. Y.	6,031	45½-46	46 -46½	46 -46½	-46½	46½-46½	46 -46½
40,000,000	National Stl. Tube, Pref., N. Y.	2,902	-90	-90	.....	.....	89½ 90	-89½
5,000,000	Penna., Common, Phila.	3	.....	-58	.....	.....	.....	.....
1,500,000	Penna., Pref., Phila.	.....	.....	.....	.....	.....	.....	.....
19,500,000	Pressed Steel, Common...	2,500	-43½	43½-43½	-43½	43 -43½	-42	-41½
12,500,000	Pressed Steel, Pref. (7½ Non-Cu.)	1,010	73½-74	74 -74½	.....	12½ 13	-74½	.....
27,352,000	Republic Iron & Steel, Common...	3,390	-12	12 -12½	-12½	12½ 13	12½-12½	11½-12½
20,352,000	Repub. Iron & Steel, Pref. (7½ Cu.)	2,830	54 -55	54 -54½	.....	54 -54½	54 -54½	-54
7,500,000	Sloss-Sheffield S. & I., Common..	100	.....	.....	.....	.....	.....	-19½
6,700,000	Sloss-Sheffield S. & I., Pref.	120	.....	.....	.....	-64	.....	.....
20,000,000	Tennessee Coal and Iron...	38,045	66½-67½	67½-69½	69 -71	71 -75½	72 -74½	70½-71½
1,500,000	Warwick Iron & Steel (par \$10)...	100	.....	.....	.....	.....	.....	-8½

\* Par \$50. \*\* \$9 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

**Bonded indebtedness:** Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20 year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$9,822,000 Illinois 5%, \$7,417,000 E. J. E. R. 5%, \$1,600,000 Johnson 6%, \$6,732,000 D. & I. R. R. 5%, \$1,000,000 2d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel, \$2,561,000 6%; National Tube, none; Tennessee C. I. & R. Co., \$5,367,000 6%, \$1,114,000 7%, \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5% Steelton, 1st, 1917, \$2,000,000 5%; Sparrow's Point, 1st, 1922, \$4,000,000, consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6% \$380,000, Col. Coal & Iron Co. Mort. 6% \$2,810,000, Col. Fuel & Iron Gen. Mort. 5% \$2,303,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899.

of high toned talk with an underlying feeling of uncertainty occasioned by the fact that buyers don't buy. It is said that the large lake company tried to bring about a sale but failed, on account of the indisposition on the part of consumers. The price at which they are open to business is said to be 16½c. There are reports of recent sales made in other quarters at 16½c., and a few days ago there was a report of Lake being sold at 16½c. The nominal quotations to-day are 16½c. for Lake Superior Ingot, 16½c. for Electrolytic and 16½c. for Casting Stock. London closed to-day £72 17s. 6d. for spot and £73 2s. 6d. for three months' futures. Best Selected is quoted £78 5s. A peculiarity of the export trade is the demand for small lots at immediate shipment.

**Pig Lead**—Is without change as to price and with a rather slight demand. The American Smelting & Refining Company quote 4c. for 50-ton lots, f.o.b. New York, and 3.95c. f.o.b. St. Louis. London is unchanged at £17 12s. 6d.

**Spelter**—This market, while still quiet, has doubtless experienced a slightly better demand. It is also said that demand from abroad has increased slightly. Prices have advanced to 4.25c. to 4.30c. for ordinary brands. London is quoted £19 10s. at the close to-day. This is an advance of 7s. 6d. above the figure of last week.

**Antimony**—Hallett's has declined ½c. and is now quoted 9½c. Cookson's is unchanged at 10½c.

**Nickel**—Refiners are said to be much in arrears in shipments and the metal holds most firmly. Prices are unchanged, small lots commanding from 55c. to 60c.

**Quicksilver**—Wholesale lots of 100 flasks and more are quoted at \$51 per flask of 76½ lbs. London remains unchanged at £9 10s.

**Tin Plate**—There is no change in the situation. Consumers are buying from hand to mouth, being supplied from stock. The American Tin Plate Company still quote \$4.84 per box of 100-lb. Cokes, New York delivery, or \$4.65 f.o.b. mill.

At a meeting of the Board of Directors of the Crucible Steel Company of America, held at Pittsburgh on Wednesday afternoon, July 25, the following officials were elected: William G. Park, chairman; Charles H. Halcomb, president and general manager; James W. Brown, first vice-president; Benjamin Atha, second vice-president; Robert E. Jennings, third vice-president; Frank B. Smith, secretary, and Reuben Miller, treasurer. An executive committee was elected, consisting of William G. Park, Charles H. Halcomb, James W. Brown, Benjamin Atha, Robert E. Jennings, Reuben Miller and Herbert Dupuy.

The strike of the iron ore miners of Morris county, N. J., has not yet been settled, although at some mines a portion of the force has returned to work.

## Iron and Industrial Stocks.

A sudden revival of interest in the steel stocks was shown during the week, and sharp advances were made all along the line. Pools were said to be at work in the leading stocks. They succeeded in lifting prices considerably, but the advances were not maintained.

	Bld.	Asked.
American Bicycle Company, Common.....	6½	7½
American Bicycle Company, Preferred.....	32	33
American Bicycle Company, Bonds.....	80	84
E. W. Bliss, Common.....	.....	137½
E. W. Bliss, Preferred.....	125	.....
Cramp's Shipyard Stock.....	75	80
Diamond State Steel.....	3½	3½
International Silver, Common.....	3½	5
International Pump, Common.....	19½	20½
International Pump, Preferred.....	66	67
Otis Elevator, Common.....	29	29½
Otis Elevator, Preferred.....	87	88
Pratt & Whitney, Common.....	3½	5
Pratt & Whitney, Preferred.....	50	55
U. S. Projectile.....	95	100
Tidewater Steel.....	9½	9½
U. S. Cast Iron Pipe Company, Common.....	4½	5
U. S. Cast Iron Pipe Company, Preferred.....	38	39½
H. R. Worthington, Preferred.....	.....	110
Empire Steel, Common.....	6	10
Empire Steel, Preferred.....	30	36

The treasurer of the American Car & Foundry Company states that the issue of nearly \$2,000,000 treasury stock recently made was necessary to make payments on properties recently purchased. The new stock consists of \$910,000 each of common and preferred, and this was the last of the \$60,000,000 stock remaining in the company's treasury. The activity of the American Car & Foundry Company in the export field is yielding results. Much new business has been brought in from abroad.

The National Wire Corporation of New Haven, Conn., have declared an initial quarterly dividend of 1½ per cent. on the preferred stock, payable August 9.

The stockholders of the National Tube Company will hold their annual meeting in Jersey City on August 20.

The Pressed Steel Car Company will pay a quarterly dividend of 1½ per cent. on the common stock on August 20.

The National Carbon Company, Chicago, have declared the regular quarterly dividend of 1¼ per cent. on the preferred stock.

The Tennessee Coal, Iron & Railroad Company make the following report for June and for six months:

Month of June—	1900.	Increase.
Net.....	\$184,037	\$67,578
Charges.....	54,777	8,214
Surplus.....	\$129,260	\$59,364
Six months ending June 30—		
Net.....	\$1,790,099	\$1,280,237
Charges.....	328,660	49,282
Surplus.....	\$1,461,439	\$1,220,955

The directors of the American Radiator Company



of Chicago are to meet August 1 to declare the usual dividend on the preferred stock.

The People's Natural Gas Company of Pittsburgh have declared the regular quarterly dividend of 2 per cent.

The net earnings of the Colorado Fuel & Iron Company for May are reported as aggregating \$226,000.

The regular quarterly dividend of  $1\frac{1}{2}$  per cent. has been declared by the Ashton Valve Company, payable August 15.

Directors of the Andover Iron Company have declared a dividend of 5 per cent., payable September 1.

The Westinghouse Brake Company, Limited, London, England, have declared the regular semiannual dividend of 5 per cent., payable July 30.

## Trade Publications.

**Exhaust Fans.**—The American Blower Company of Detroit, Mich., have completed a catalogue describing the many patterns of exhaust fans constructed by them. The housing in their steel plate fans is supported by a circular cone shaped casting which is a part of the arm supporting the journal boxes. On the opposite or inlet side is another casting with a foot piece extending to the floor, bolted on in the same manner. These carry the housing between them by means of bolts. The housing itself is made of heavy steel plate with an angle iron frame. This form of construction makes the fan reversible, and besides permits of the direction of the discharge being changed to any angle.

**Industrial Railways, Conveying Appliances, &c.**—The C. W. Hunt Company of West New Brighton, New York, have issued a pamphlet intended to serve as an introduction to the general line of machinery manufactured by them. It will prove to be of value to all those who have to handle materials. Brief mention is made of steam and electric hoisting engines, coal elevators, industrial railways and the like.

**Plain and Ornamental Metal Work.**—A profusely illustrated catalogue has been received from the Lasar-Letzig Mfg. Company of St. Louis, showing their many patterns of wrought iron and wire fences, window guards, counter railings, office partition railings, elevator inclosures, ornamental wrought iron or steel window guards, stable fittings, malleable iron roof crestings, weather vanes, steel door mats, metal lawn furniture, and the like. The designs are all exceedingly attractive and serve to illustrate the great variety of patterns manufactured by the company.

**Sparks from the Crescent Anvil.**—We have received from the Crescent Steel Company, Pittsburgh, a copy of the July issue of the monthly publication devoted by them to general information on steel, with a particular bearing on the steel manufactured by themselves. The July issue contains a number of illustrations of buildings at the Paris Exposition, together with a considerable quantity of interesting and valuable technical matter.

**Forming Lathes.**—The Meriden Machine Tool Company, 106 Britannia street, Meriden, Conn., have issued a little pamphlet entitled "They All Do It," which is a very ingenious and entertaining exposition of various methods of advertising. The several methods of advertising are used for the purpose of calling attention to the company's forming lathes.

**Gasoline and Steam Fire Engines.**—The Waterous Engine Works Company of St. Paul, Minn., describe in a pamphlet their fire engines, operated by gasoline or steam. This gasoline engine has proved successful under the most severe tests, and is thoroughly well designed and built throughout. It is simple, of light weight, has ample power for the heaviest streams and is safe and reliable.

**Presses and Dies.**—This forms the title of Catalogue 13, issued by the Ferracute Machine Company of Bridge-ton, N. J. In this are described their drawing presses of different types, light and heavy stamping presses, dies of all kinds, armature notching presses, cutting presses, &c. These machines are built in capacities from the lightest to the heaviest work done, and are designed and finished in accordance with the strict requirements of these works.

**Drill Grinder.**—The new Yankee drill grinder is described by Wilmarth & Morman Company, Grand Rapids, Mich. Their line of drill grinding machinery is adapted to every size and style of drill made, including

three and four lipped drills, flat drills, rose chucking reamers, &c. All that is necessary to grind a drill of any size within the range of the machine is to drop it into a V-shaped guide or holder, then bring up the tail stock until the drill is carried into contact with the wheel. The machine is built upon such lines that the very size of each drill determines the proper position of the holder. For instance, a  $\frac{1}{2}$ -inch drill always stops at a certain place and cannot possibly occupy the position intended for a  $\frac{3}{4}$ -inch drill.

## Drilling Machines, Gear and Rack Cutters, Milling Machines, Tapping Machines, Grinding Machines, &c.

—These are all described in a catalogue of the Dwight Slate Machine Company of Hartford, Conn. Their flexible spindle adjustable head drills are designed for very light work, 3-16 inch holes and under, and are used on cutlery work, drilling rivet and joint holes, on gas jets and for light counter boring on lock frames or plates. The heads can be adjusted as close as  $\frac{1}{8}$  inch from center to center and to a maximum distance of 8 inches.

**Injectors and Ejectors.**—The Sherwood Mfg. Company of Buffalo, N. Y., have sent us a catalogue dealing with their injectors and ejectors. The main features that recommend these injectors for service are compactness, reliability and economy. All the injectors are thoroughly tested under working conditions, and are therefore sent out in proper condition to perform the work for which they are intended.

**Ideal Power Wind Mills.**—We have received from the Stover Mfg. Company, Freeport, Ill., an exceedingly artistic catalogue, descriptive of the Ideal power wind mill and auxiliary goods made by this company. The seeker for information relative to the advantages and benefits to be derived from the use of wind mills will get a wealth of information from this publication, which comprises 64 pages and enters very comprehensively into the subject. All details appear to be thoroughly covered, not only with respect to the character of the machinery, but in connection with towers, gearing and many of the important purposes to which wind mill power can be applied. The catalogue is replete with illustrations of an unusually high order of excellence.

The Macomber & Whyte Rope Company, successors to the Leschen-Macomber-Whyte Company, 19 and 21 South Canal street, Chicago, have purchased the entire interest of Mr. Leschen in the Leschen-Macomber-Whyte Company and will continue to do business at the old location. They announce that they have the largest stock of wire rope in Chicago and are prepared to give all orders better attention than ever. They will also continue to carry a complete stock of specialties as heretofore in mine, quarry and contractors' supplies.

The Franklin Institute of Philadelphia has awarded to Uehling, Steinbart & Co., Limited, of Carlstadt, N. J., the John Scott premium and medal for their gas composimeter, an instrument used in large boiler plants for autographically recording the percentage of carbon dioxide in the flue gases. The adoption of the instrument in Germany has been very marked. The application of the pneumatic pyrometer, made by the same firm, to annealing and tempering furnaces indicates the growth of demand for a means of controlling the heat with a view to securing consistent results.

An official report of the extent of the operations of the rolling mills located in Ohio has been made up and is as follows: Canton sheet mills, idle; Cambridge Sheet Mill, working, Tin Plate Mill, idle; Canal Dover, idle; Cleveland, the Cleveland Hardware Company started up on the 16th, Tin Plate Mill, idle; Lake Erie Iron Company, idle; Dennison, idle; Dresden, idle; East Toledo, idle; Findlay, idle; Girard, idle; Iron-ton, Eagle, idle; Iron-dale, idle; Lisbon Tin Plate Mill, idle; Leetonia, Cherry Valley Works, idle; Martin's Ferry, Laughlin Tin Plate Mill, idle; Etna-Standard, started July 16; Niles, idle; New Philadelphia, idle; Haselton, idle; Piqua, closed down two weeks for repairs; Pomeroy, idle; Steubenville, idle; Youngstown, Brown Bonnell, idle; Valley Mill, idle; American Steel Hoop Company, idle; Warren, idle; Zanesville, working.

A press dispatch from St. Johns, Newfoundland, dated July 24, says: "The Belle Isle miners' strike was ended this morning, the men gaining almost all they demanded. The new schedule of wages provides for 11 cents an hour for surface workers, 12 cents for miners below ground, and 15 cents for overtime. Operations were resumed with a full force at daylight, and the steamer 'Aggi,' coal laden, will sail this evening." The miners referred to are the iron ore miners employed by the Dominion Steel Company.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,  
New York, July 25, 1900.

Machinery merchants here are still waiting for the consumer to quit waiting. In the meantime builders of machine tools are growing a little restless, and we now hear of two large concerns who have each notified their representative that prices have been cut 5 per cent. It is also said that large machinery dealers who have been placing contracts with the builders most liberally of late are now countermanding many of these orders a little disappointingly to the builders, who will have to turn many of the machines now under way into stock. This applies, however, only to the smaller classes of machine tools. The builders of heavy tools have really been benefited in one way by the present lack of demand in the iron and steel market. Several of the gigantic iron and steel interests have seen in this period of dullness a chance for extending their works. This they are now doing, certain concerns arranging to enter into the manufacture of new lines. They are consequently purchasing quite liberally of heavy tools both for adding to their present shop equipments and for the equipment of the new additions to their works. The brass mills of the Naugatuck Valley, Conn., have been closed for repairs for the last week or so, and have been adding to their plants.

At the last meeting of the Board of Estimate and Apportionment of New York City an issue of \$150,000 in bonds was authorized for an addition to the Metropolitan Museum of Natural History. This fund will doubtless be used for the installation of the power station, which has been contemplated for many months. Plans have been drawn and specifications issued, but the authorities have been unable to purchase the necessary equipment, owing to lack of funds. Present plans contemplate the installation of about a 4000 horse-power plant. The Board of Estimate and Apportionment also granted the issuance of \$200,000 in bonds for the erection and equipment of repair shops for the fire department. Fire Commissioner John J. Scannell is now asking for bids for necessary equipment, which is to be added to the repair shops at Canton and Bolivar streets, Borough of Brooklyn.

Contracts have been let by the Logier Motor Company for the building of a power house, &c., on the Saranac River, near Plattsburg, N. Y., where the company are locating their shops and moving their business. A. C. Rice of Worcester, Mass., is the engineer for the company. It is said that about 1000 men will be employed.

The contract for the coal and ashes handling machinery for the new electric power station of the Manhattan Elevated Railroad has been awarded to John A. Meade & Co. of 11 Broadway. The apparatus consist of four conveyor systems and one steam shovel. The Manhattan Company have not yet decided upon the forced draft apparatus. The original plans have been changed, inasmuch as that alternating current motors will be installed instead of the direct current motors as originally intended.

John A. Meade & Co. have been awarded contracts for two steam shovels and cable roads for handling coal and iron ore at Duluth and Chicago. The apparatus is to be installed by the Philadelphia & Reading Coal & Iron Company. They also received orders for conveying machinery, to be placed in the new power station of the Northwestern Elevated Railroad Company of Chicago, and the new Harrison Street Station of the Chicago Edison Company. They are also about to install an elaborate system of conveying machinery at the station of the St. Louis Transit Company.

The Tampa Foundry & Machine Works, recently incorporated, will build a plant at Tampa, Fla. They have purchased considerable machinery in this market, and are now looking for a few second-hand tools. W. C. Thomas is secretary and treasurer of the company.

The Atlantic Coast Line are said to be looking for machinery to equip a new shop which they are building at Rocky Mount, N. C. The principal offices of this road are located at Wilmington, N. C.

T. B. Baldwin, president of the Birmingham Cement Company, is now in town. He is making his headquarters at the offices of H. W. Poor & Co., 18 Wall street. Mr. Baldwin stated that the fire of last week destroyed everything at the Ensley, Ala., plant but the boilers and driers. The exact loss has not as yet been ascertained, as the insurance adjusters are still at work. Estimates are, however, being obtained on the necessary equipment to replace that which was destroyed. Nothing can be purchased, however, until J. D. Cheever, who is the treasurer of the company, returns from abroad. He is expected within three or four weeks. The insurance will not cover the loss. The plant has only been running since the first of last May. The plant has been producing Portland cement from the slag coming from the furnaces of the Tennessee Coal & Iron Company.

Heavy orders are on hand and the company will endeavor to get a new plant running as soon as possible.

It is said that a new machine shop will be built at Jersey City, N. J., by the Warwick Machine & Valve Company, who were organized with \$100,000 capital recently. The company will build ice machinery and valves. Newport News is also mentioned as a possible site for the new plant.

Bids are being sent to F. W. Welch, Mayor of Alexandria, La., for a high speed automatic engine, two boilers, a feed water heater, separator and air lift. J. C. Allen is Superintendent of Electric Light and Water Works.

F. T. Crane, City Engineer of Orange, N. J., whose office is in the National Bank Building, Orange, N. J., is asking for bids for the construction and erection of water pressure pumping engines at Campbell's Pond, Milburn, N. J. Plans and specifications can be examined at the office of the engineer. Bids will be received until August 6. John J. Cuddy is chairman of Water Committee.

Oscar H. Opsata of Lawrenceburg, Tenn., is said to be organizing a company who propose to build a cannery. Power generating machinery and machinery for making tin cans will be required.

Until August 16 bids will be received by John N. Hayman, president of the Athens State Hospital of Athens, Ohio, for a direct connected steam engine and dynamo.

A triple expansion vertical pump is wanted for the Tube Well Station of the Yonkers Water Works of Yonkers, N. Y. John C. Shotts is president of the board.

A substantial addition to their power house is being planned by the Chelsea Jute Mills of Greenpoint, L. I. They are at present in the market for a 450 horse-power Corliss engine.

Thayer & Co., Incorporated, of 39 Cortlandt street, received the contract for the boilers to be installed at the new naval magazine to be built on Iona Island, opposite West Point, on the Hudson. There will be three boilers and equipments.

The Electric Launch Company, who are moving their works from Morris Heights, N. Y., to Bayonne, N. J., will build a plant which will be much larger than their former works. It is said that they intend building the "Holland" submarine boat which has been adopted by the Government.

A. Clavel of 74 Rue Amelot, Paris, advises us that he wishes quotations and time of delivery on two Acme engine lathes, with gap bed and compound slide rest. The lathes are to be of 60 inches swing, with 6-foot bed. Mr. Clavel is a builder of machinery tools and hardware.

Extensions are to be built to the plant of the Elektrizitäts Aktiengesellschaft vom Schückert & Co., at Worms, Germany. It is reported that they will require something like \$300,000 worth of machinery and tools for the equipment of the new buildings. This company have just been awarded a contract from the harbor authorities of Venice, Italy, for six large electric traveling cranes, for which American makers competed through their European agents. The company also have offices at Nuremberg, Germany.

## The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building, 1  
Philadelphia, Pa., July 25, 1900.

With but few exceptions a period of quietness prevails in the Philadelphia machinery trade. Comparatively few new orders are being booked, yet the shops, as a rule, continue active, due to previous bookings.

"A waiting market" must again be used as the most expressive phrase to apply to present conditions. Manufacturers do not expect much of a betterment of present conditions before September or October. Prices are much too unsteady to encourage the placing of orders of any considerable moment, and what little buying there is is just sufficient to cover immediate needs.

There is said to be an excellent demand for pneumatic tools, especially for pneumatic hammers, it being reported that one firm recently sold \$3000 worth of such hammers in one week. A good demand for the smaller classes of machine tools is also evident. These minor sales, as a rule, are not deemed of sufficient interest to report, yet in the aggregate such orders fill in big gaps on the right side of the ledger during the course of a year.

Between the hot weather of midsummer, the coming Presidential campaign and the unsteady condition of prices, it is safe to assert that nothing to excite any considerable interest is liable to occur among local machinery affairs within the next 60 days.

Nazel & Bassett, after considerable preparation, are now in a position for manufacturing power transmission machinery, shafting, &c., and already have a good sized order for shafting for local installation. Portable drills



are also now being made by this firm. Nazel & Bassett are probably the only firm in this vicinity in a position to make repairs on Daimler gasoline engines, such work heretofore being sent to New York. Judging from the fact that four Daimler engines have been repaired by this concern during the first half of July, this branch of their business should be of some value.

Israel H. Johnson & Co. state that the past 30 days have been the busiest they have experienced since they have been in business. So fast has the work on this firm's new shop been rushed that it is expected they will be in full operation therein within 30 days. The new boilers are all in place and the traveling 20-ton crane is about to be erected. This new shop will greatly increase their facilities for turning out lathes and will enable them to make some headway on a large number of orders on hand.

The Stow Flexible Shaft Company report satisfactory conditions for this season of the year, their sales of electric portable drills being good. They have just received an order from a Boston house for one of their largest size drill plants, complete with shafting and motors.

The Energy Elevator Company say the busy times still continue with them, orders for their elevators being booked very frequently. They have just received an order from a warehousing company in Japan for one of their extra size freight lifts, making the third order from the same concern in a short time.

The Energy Elevator Company make a specialty of installing lifts in private houses, sanitariums, &c., for the purpose of carrying invalids from one floor to another. This style of lift is of peculiar design, being long and narrow so as to accommodate a rolling chair or stretcher. Two such lifts were recently installed by the company for Colonel Morrell, one at his Torresdale, Pa., residence, and one at his summer home at Bar Harbor, Maine.

The Pennsylvania Machinery Company, Bourse Building, report a satisfactory condition of trade. Among the month's sales are: Set of pumps and engine for the Commercial Sand Company, Lewistown, Pa.; engine and shafting for a Delaware River excursion boat, and a complete new plant for J. H. Bozarth & Sons, Ellwood, N. J., whose buildings were recently destroyed by fire. The agency for this section for the Shaw pneumatic hammer is now controlled by the Pennsylvania Machinery Company, and they state that sales to date have been very encouraging.

The Philadelphia Machine Tool Company have removed their offices from 445 North Darien street to the adjoining building, 443, where they now occupy the entire first floor. After alterations are completed the former office space will be occupied by their pattern making department.

Thos. H. Dallett & Co. report a fair volume of trade, with an increase in foreign inquiries. This concern are making a specialty of manufacturing tools for special purposes, adapted to places requiring tools of special design, for which they state there is a good demand. The line of pneumatic tools manufactured by this firm also shows good sales.

The Philadelphia Pneumatic Tool Company, Stephen Girard Building, Philadelphia, report a good volume of trade and say the demand for their product is excellent. They have just secured orders, after severe competitive tests, for a large number of pneumatic chipping hammers from the Penn Steel Castings Company, Chester, Pa.; Cramp's Shipyard, Philadelphia; hammers and other pneumatic tools for Maryland Steel Company, Sparrow's Point, Md., and an order from the Pennsylvania Steel Company for hammers, this being the third lot ordered by that company within a short time. The Philadelphia & Reading Railway Company have also just placed an order for pneumatic tools.

Geo. V. Cresson Company are installing a considerable number of shafting outfits at the present time, and also report a fair volume of trade in their other lines. Export shipments this month will include a large quantity of shafting for Cuba. Norristown and Reading, Pa., are also the destination for several lots of shafting. Considerable of the same material will also be shipped to Southern and Eastern cotton mills.

The Harrison Safety Boiler Works are running steadily with a fair number of orders on hand. They state the outlook for fall trade is encouraging.

Dienelt & Eisenhardt are kept busy on orders from abroad for oil cloth printing machinery. This concern state as their belief that after the opening of the fall season trade conditions will grow much stronger, and they look for a good volume of trade later on.

The J. W. Paxson Company have secured the services of Ambrose G. Warren, late with the Deane Steam Pump Company. Mr. Warren is a mechanical engineer of long experience and he will perfect the new sand blast machine which the Paxson Company are now manufacturing under recent patents.

The Southwark Foundry & Machine Company were never fuller than they are to-day. They have enough

work on hand to run full time for at least a year to come.

The Bement-Miles & Co. branch of the Niles, Pond, Bement Company are running very steadily and have made heavy deliveries during the first six months of this year, but still have sufficient orders since that time to leave them in equally as good a position as that which they had at the beginning of the year. The downtown plant (Philadelphia Engineering Works) are also very much crowded, many orders for electric cranes being on hand, quite a number of which are for local concerns, otherwise for Pittsburgh and the West.

The Otto Gas Engine Company make an excellent report. They state that if their plant was twice its present size they would still be pushed for room. Heavy orders for their gas engines are on hand, many being booked from Mexico and Canada. This concern have work enough on hand to keep them rushed for a considerable time to come. Their foreign branches in France and Germany report a big European demand for their engines.

The Barr Pumping Engine Company, Germantown Junction, Philadelphia, have recently closed a contract with the city of Haverhill, Mass., for a 6,000,000-gallon horizontal cross compound condensing crank and fly wheel pumping engine. This engine is to be in all respects similar to one that has been installed by this company for the city of Waltham, Mass., and which on test gave one of the highest duties that has ever been recorded for compound pumping engines.

The shops of the Baldwin Locomotive Works continue busy. A slight let up in orders is noticed, but is expected at this time of year. This firm say the outlook for a busy season the coming fall is splendid. They will ship among others this month 15 large passenger locomotives for the Lehigh Valley Railroad Company and also two large passenger engines for the Union Pacific Railroad; the latter engines are to be equipped with the Vanderbilt patent fire box. Other shipments include many small lots of one and two engines to various railroads and business concerns.

The Nafie & Levy Shipbuilding Company report a most excellent trade condition. Work on the torpedo boat destroyers is progressing rapidly, and it is expected that the "Bainbridge," "Barry" and "Chauncy," three boats of this class, will be launched on July 24, as will a large tug for the Rockland & Lockport Cement Company of Portland, Maine. On July 26 a large tug for F. W. Munn & Co., Philadelphia, will be launched, and on July 31 the new fire and police boat, "Samuel H. Ashbridge," will be launched. The laying of the keel of the cruiser "Denver" will be begun as soon as the above mentioned boats are launched and the necessary room secured.

## The Cincinnati Machinery Market.

Office of *The Iron Age*, Pickering Building, 1  
CINCINNATI, OHIO, July 23, 1900.

There has been no time within recent years when operators in the several branches of the iron trade were more at sea in their conjecture as to the future course of business than they are now. The wise ones who foresaw the recent boom and expanded in time to reap a rich harvest are now looking serious and studying the situation as never before. Some lines of manufacture are still quite busy, but the trade generally seems to be waiting for something, they hardly know what. All agree upon one thing and that is that until pig iron settles and commences to move again no one can do much more than guess as to the future. Many contracts recently made with the general foundries have been on the basis of about \$14 to \$14.50 for No. 2 pig iron, Birmingham. These contracts are for a sliding scale, the basis to be rearranged every three months, according as iron shall advance or recede. The machine tool trade has been dull for the past six weeks, and all the effort to dispose of finished work seems only to result in constantly increasing stocks in the warerooms at the various factories which continue to push production. There is an optimistic feeling, however, underlying the superficial discouragement, and a nearby revival is not the least expected of all the events which are to be guessed at. Makers of tools say there is one feature in the general situation which must not be overlooked lightly and that is that the recent boom has demonstrated beyond dispute the prominence of Cincinnati as a world factor in the iron trade, and the superior quality of the tools turned out by her shops. These facts now stand out as established more firmly than ever. There is also a feeling quite strongly developed that prices, as a rule, are on too high a basis, and that before trade moves again with a lively foot there must be a scaling down in the selling figures of the finished product. Of course there is always something doing, and every few days a nice order drops in for some one, which enables his particular shop to run for a while longer. Instead of orders ahead of capacity, they come in now in the shape of daily bread and that lib-

eral enough to keep owners out of the slough of despond.

One of the most active branches of the trade just now is that devoted to the manufacture of boilers. There has been a big increase in the inquiry, and order books also show that this year so far has been ahead of 1899. Within the past 60 to 90 days buyers have shown a very cautious spirit, and slowness in the closing of contracts has been the feature of the trade. Within the past week, however, more contracts have been signed, and there is a feeling that raw materials are about as low as they may be expected to go. It is well to emphasize this fact that in this branch of business there seems to be a very decided feeling that the outlook for the remainder of the year is exceedingly good.

The McIlvain & Spiegel Boiler & Tank Company closed last week one of the largest contracts of recent years. It is for a large number of tanks, boilers, coolers, washers and gas mains for the new gas plant being erected at Hamilton, Ohio, by the Hamilton-Otto Coke Company. The boiler will be of 1000 horse-power, 72 inches in diameter and 18 feet long, containing 70 lap welded tubes, 4 inches in diameter. The coolers will be 9 feet in diameter and 25 feet high; the washers are also about the same size. The total contract calls for \$40,000, and the plant when completed will be the finest coke outfit west of Pittsburgh. The same company have also taken the contract for two 72-inch by 18 feet triple riveted boilers for the Boys' Industrial School, at Lancaster, Ohio.

There is now being built at St. Bernard, Hamilton County, Ohio, a large manufacturing plant by the Bowker Fertilizer Company, and for this the McIlvain & Spiegel Company will build two 72 x 18 triple riveted Hartford specification boilers. They have also just taken the contract for three cylinder boilers for John Barrett & Son's steamer "T. H. Davis," each boiler to be 47 inches in diameter by 24 feet in length, and to contain six 10-inch lap welded flues. They have also taken the contract for a 66-inch by 21 feet boiler for the Ironton Water Works. One of the best foreign orders has just been filled, it was for four Scotch marine boilers for the Bluefields Steamship Company, Nicaragua. The last of the quartet was just shipped.

The Tudor Boiler Company have just completed two oil tanks for the Globe Soap Company of this city. They are each 25 feet in diameter and 34 feet high, and have a combined capacity of 250,000 gallons. The same company have just shipped to a concern in East Chicago a 500 horse-power water tube boiler. They are also at work on a large tank order for the new chemical works being erected by the Mock Chemical Company on Hunt street, this city.

The Blynner Iron Works Company still continue to receive complaints from their agents in the Philippines regarding the tariff regulations which Uncle Sam has seen fit to establish in that country. Trade which for a time opened up in a most promising way now seems to have fallen flat, and until some change is made in conditions now existing there will be no prospect of a revival. In other parts of the Spanish speaking world—namely, Mexico and South America, trade is holding up splendidly. Among some of the very recent orders placed on the books are: One for a complete sugar mill outfit for the State of Sonora, Mexico, also same kind of order for a town in the South of Mexico. Both these orders are for quite a large amount of money. The feature of domestic trade is the very active condition of the sorghum mill branch of their business. These outfits are comparatively inexpensive, involving an outlay on the part of the purchaser of no more than possibly \$125. The demand just now from Kansas and Missouri is quite large. A sample order from a dealer in a town in one of those States just received was for one carload, or \$1800, of these outfits. The general average of trade is good, and the outlook for the fall is considered as encouraging.

The Hall's Safe Company, who are one of the new concerns in this line and who appear to have been most fortunate in their choice of a time for embarking in business, say that their two years' experience has been far beyond their most sanguine expectations. The members of the company, of course, were all men who had been thoroughly trained in the old Hall's Safe & Lock Company, and so it can hardly be considered as a new company in the general acceptance of the word. The foreign demand for American safes is something phenomenal, and shipments are being made to every country on the globe almost. Last week a carload was started to their agent at Shanghai, and the country tributary to Port Arthur and Vladivostok is proving a fine field for cultivation. At present Holland and Mexico are among the best foreign customers. In addition to the very good trade in small safes the company is successful in the landing of quite a share of the large vault work which is being offered. Among their most important contracts is that for the vaults for the Union Safe Deposit & Trust Company's new building in this city, to which they are now putting the finishing touches. They

have secured the contract for the vaults for the Continental Trust Company's new building, at Baltimore. Also, same for the Mississippi Valley Trust Company, St. Louis, and for the Merchants' and Manufacturers' Bank, at Pittsburgh. The outlook for fall trade is very good.

Among the very nice foreign orders received by the American Tool Works Company within the past month was one by cable from Yokohama, from the Japanese Government, for quite a number of such tools as are used for repairs in navy yards.

## The Cleveland Machinery Market.

Office of *The Iron Age*, The Cuyahoga,  
CLEVELAND, July 23, 1900.

Were it not for the molders' strike the majority of the manufacturers in this city would be well satisfied with conditions, in view of the time of the year and the approaching Presidential campaign. Many of the local factories have a large amount of business on hand, which was held up during the machinists' strike of two months ago, and with some of the factories it will be several months before the old business is all taken care of. As a rule the new business being received is for small and additional equipments. Considerable large business is in sight, but the uncertainty of the iron market is still holding it off. According to several people the railroads of the country are buying liberally of machinery; their business has been enormous during the past two years, and they can now well afford to make improvements. There is an improvement in the second-hand machinery market, and the dealers are buying freely where prices are right, showing confidence in the future.

The molders' strike still shows no indications of a settlement, and before long the trouble is likely to prove disastrous to some of the machinery manufacturers. Many of them were enabled to lay in a stock of castings during the machinists' strike, and some of them still have a supply on hand, but these goods were all standard sizes, so that where orders for machinery out of the ordinary are received it is already difficult to secure castings. In one or two cases it is possible that factories will be obliged to close down in some departments unless castings can be secured and a continuance of the trouble will add greatly to the loss caused by the machinists' strike.

Last week the National Founders' Association succeeded in importing a few men to take the place of the striking molders, but the number was hopelessly inadequate to the needs. A large number of the striking molders are leaving for other cities pending the settlement of the strike. The molders say, and the foundrymen do not contradict them, that the question at issue is not one merely of wages, but of supremacy in the management of the foundries, since the molders' union is perhaps the strongest trade organization of the kind in the country, and it has been very successful in fighting for the demands of its members. The executive officers of the National Association are holding almost daily meetings in this city, but they decline to give out any information regarding their plans.

The Ajax Mfg. Company, manufacturers of forging machinery, report that they have more business on hand than ever before, with many good contracts constantly coming in. Orders on their books at present amount to over \$100,000. The better portion of their business, however, is from the railroad interests of the country for additional shop equipments; the orders from manufacturing concerns being somewhat slack at this time. They also have considerable Government business on hand. They are just completing the largest piece of work they ever turned out, and claimed to be the largest forging machine of its kind ever built. Completed it will weigh something over 100 tons, the base alone weighing 65,000 pounds. This machine is for the Pennsylvania Railroad Company's Altoona shops. They have orders for similar machines for the Charleston Navy Yard and for the Heckert-Baltzley Billet Company of Findlay, Ohio. The latter machine will be utilized in upsetting an 18-inch flange on a 13-inch tube. The Navy Department has also ordered two similar machines, somewhat smaller, for the Pensacola Navy Yard. In finishing the castings for these machines the company have designed a special tool for planing, milling and drilling. The three operations are accomplished with the single machine without moving the castings: the tool traveling over the work instead of the usual method of carrying the casting back and forth on the bed of the machine. The complete machine weighs 135,000 pounds, and the foundation plate upon which the casting stands weighs 34 tons, resting on 5 feet of concrete. The tool was designed by J. R. Blakeslee, president of the company, and it is calculated that it will save nearly 50 per cent. in the cost of finishing.



The Cleveland Crane & Car Company report a large amount of work on hand, with a satisfactory amount of business coming in; much of it being for additional equipments on former orders. They are furnishing a 50-ton electric crane to the Shewinnigan Water & Power Company, Shewinnigan, Quebec, Canada; the Halton Engineering & Construction Company of Philadelphia being the engineers for a large plant, which is being installed. They have received two additional orders for large jib cranes from the Dimmick Pipe Company of Birmingham, Ala., whose plant they equipped earlier in the year. They are building two 30-ton hand power cranes for the Pennsylvania Steel Company's plant, at Steelton, Pa., and a large electric hoist for Vicker's Sons & Maxim of Sheffield, England. They are being seriously delayed through the molders' strike, and it seems probable that they will be forced to close down a portion of their plant unless they can secure castings.

The Vulcanus Forging Company announce that they are on the market for a bow pointer and five upsetting machines. Their plant, which was completed only about three months ago, requires additional equipment to take care of business. This week they are shipping a carload of air brake forgings to the American Car & Foundry Company of Huntington, W. Va., and they have recently completed a large quantity of forgings for L. P. & J. Smith, who are building the Government breakwater at Cleveland. They are also securing a very satisfactory amount of business for their Hathaway transfer table for electric railway use. An order for one of these tables was received this week from a street railway company in the City of Mexico. Tables were shipped recently to Cape Town, S. A., and Cairo, Egypt.

The Cleveland Punch & Shear Company report but slight falling off in the amount of business. The majority of orders are for additional equipments for concerns to whom they have already sold, and on the whole they state that business is fully up to the standard of this time last year.

The Acme Machinery Company have a large amount of business on hand, some of which has been carried over since the machinists' strike of two months ago. The new business being received is from concerns duplicating former orders, and while the orders are somewhat smaller than usual, the bulk of business is very flattering.

Bardous & Oliver, screw machine manufacturers, state that the business at present is somewhat better than last year at this time. A number of foreign orders are being received, although for small quantities, mostly single machines.

Peter Gerlach & Co., manufacturers of barrel and stave making machinery, state that their business is naturally very slack at this time of the year, and that business at present is holding out very satisfactorily. They are sharing in the common complaint of the difficulty in securing castings.

George H. Bowler, dealer in second-hand machinery, reports that the outlook in his line is considerably brighter than was the case two or three months back, and that second-hand dealers are buying freely. He is prepared to take on stock in almost any quantity at the right price, and is more anxious to buy than to sell just at present. Last week he bought up a large consignment of iron working machinery, engines and boilers, &c., about 50 pieces in all, at Buffalo.

The Cleveland Twist Drill Company report that the business during June was an improvement on the same month last year, but this month there has been a falling off. Orders are numerous, but the quantities called for are not so large. The company are now occupying a fine suite of new offices just completed.

The Snyder-Hughes Company, pumping machinery, are experiencing a good demand for pumps of standard sizes, few large equipments being called for. Difficulty in securing castings is delaying their deliveries.

The Cleveland Elevator Bucket Company have a large amount of work on hand, but their story is similar to that of other concerns; small contracts, largely for repairs and additional equipments. They have several large contracts in sight which are being held off for a still further decline in the price of material.

The local office of the Marshall-Huschart Machinery Company, Chicago, report a very satisfactory business, but nearly all small orders.

Strong, Carlisle & Hammond are also doing a very fair amount of business for this time of the year. They report that their factories are still far behind on orders, only slight gains being made. They showed a letter from G. A. Gray & Co., Cincinnati, replying to an inquiry, and stating that the best they could do on certain sizes of planers was five and six months. They stated that other concerns were quoting somewhat shorter time, but in their opinion the factories were simply bidding for business and would not be able to supply the goods. Prices on these goods, they stated, are showing no decline.

E. A. Muller, superintendent for the Springfield Machine Tool Company, Springfield, Ohio, called on Cleveland manufacturers last week, showing photographs of a fine new line of machine tools.

### Carnegie Steel Company Going Into Rods.

In all probability the Carnegie Steel Company will break ground at an early date for the erection of a large rod mill, either of the Garrett or Morgan type. They will roll rods for all purposes, selling them in the open market. It is understood that this move has been under consideration for some time, and that the decision was made by the Board of Directors to erect what will probably be the largest rod mill ever built. The entrance of this company into the market as sellers of rods will probably cause a material change in the rod situation as it now exists. It is also reported, but not confirmed, that the company will go into the manufacture of hoops and bands.

### PERSONAL.

Harry M. Davies, formerly of Elyria, Ohio, has been elected treasurer of the Dominion Iron & Steel Company of Montreal, Canada.

John C. Cromwell of the Garrett-Cromwell Engineering Company of Cleveland, Ohio, sailed for Europe on the "St. Louis" on Wednesday.

C. O. Brunner, treasurer of the Bethlehem Iron Company and Bethlehem Steel Company, completed on July 12 his fortieth year of service. The occasion was marked by the presentation to Mr. Brunner of a silver pitcher and salver and a handsome cane from his fellow members of the staff of the two companies.

Y. Watanabe, a naval architect under the Japanese Government, and Lieut. S. Akiyama, former naval *attaché* at the Japanese Legation in Washington, are in this country visiting some of the principal shipbuilding and steel plants, on their way to the Paris Exposition.

Henry B. Lupton, formerly secretary of the Oliver Wire Company, but later connected with the New York office of the American Steel & Wire Company, has been elected vice-president of the Oliver Iron & Steel Company, and will be in charge of the sales department of that concern, assuming his new duties about August 15.

Charles T. Boynton, who resigned recently as general sales agent of the American Steel & Wire Company, will be elected president of the Shelby Steel Tube Company, at Cleveland, Ohio. It is also probable that A. M. Crane, formerly assistant general manager of the American Steel & Wire Company, will become identified with the Shelby Company.

**Information Wanted.**—Who manufactures a machine for making wooden tooth picks?

The Saginaw Mfg. Company, Saginaw, Mich., have opened a branch house at 35 South Canal street, Chicago, where they will carry a very complete stock of Gilbert wood split pulleys. G. A. Gilbert, a member of the firm, is manager of the new branch.

S. V. Huber & Co., Ferguson Building, Pittsburgh, consulting engineer for the Republic Iron & Steel Company, are drawing plans for the new continuous bar mill to be added to the Bessemer plant just finished by the company at Youngstown, Ohio. On the present blooming mill billets can be rolled down to 4 x 4 inches, and on the continuous mill which is to be added they will be rolled to 1½ inches in the initial heat. This mill will contain a great many new features, and work on it will be pushed as fast as possible.

Application has been made to the Secretary of State of West Virginia for a charter for the National Roofing & Corrugating Company, with a capital stock of \$5,000,000. It is proposed to take over the majority of metal roofing, metal ceiling, eave trough and conductor manufacturers of the United States, most of whose plants are in the Middle West. The main office is to be in Wheeling, and the incorporators are G. E. Needham, Cleveland, Ohio; Edward Lagenbach of Canton, Ohio; R. J. Hyndman of Cincinnati; Robt. T. Scott of Cambridge, Ohio.

# HARDWARE.

## Condition of Trade.

THE market at the present time is showing the effect of influences which operate in opposite directions. The condition of the Iron market is not such as to have a reassuring effect upon buyers, as it is not yet settled that the bottom has been reached, with a large possibility that it will decline to a still lower point. Until the downward tendency is certainly over, and there comes something of a reaction in the withdrawal of extremely low prices for Iron, the confidence of the trade in the stability of the prices of raw material is not likely to be fully restored. This condition, of course, tends to repress transactions, and yet the decline has been so rapid and decided that settled values, will, it is hoped, soon be reached; and in anticipation of this there is more disposition to resume enterprise and push actively in business matters. The general prosperity of the country, and the regular and steady consumption of goods, is an influence which tends to the revival of business, and it is noticeable that orders are coming in more freely from the retail trade generally, and that there is a willingness on their part to purchase in sufficient quantities to keep their stocks in good shape. Reports from both manufacturers and jobbers indicate that retail business is on the whole fairly good. For the past few months the jobbing trade have been buying very few goods, their energies being devoted to marketing their stocks. In this they have been quite successful, though at the expense of a good deal of irregularity in price. Some of them are beginning to enter the market again, and orders from this class of merchants show something of an improvement. There is a gradual revision of prices on the part of manufacturers, but many lines are held at former quotations. In many kinds of Hardware in which labor is an important element of cost the decline in the raw material does not much more than offset the increase in wages. On this account, there is a good deal of steadiness in the prices of many miscellaneous articles. Indeed, in many lines of goods the cut prices which are being made by the jobbers are introducing more of the element of weakness than of concessions made by the manufacturers. On the whole the situation appears to be clearing somewhat, with indications for a gradual revival in activity and a good business in the fall.

### Chicago.

(By Telegraph.)

One significant feature of the present Hardware trade is the increasing number of mail orders. It is inferred that these orders mean a quick need of the articles bought. Salesmen also are sending in better lists. This is explainable in part by the return to the road of many salesmen who during the first half of the month took a vacation. On Monday this week the business of one large Chicago seller was by far the best for any day this month. Salesmen say that dealers do not complain about their own trade, as a rule, and that most of them find it satisfactory, with, of course, exceptions in those localities affected by unfavorable crop conditions. Rains have brought more refreshing news from the North-

west, and the disposition is to look for a very fair trade from localities that looked very unsatisfactory from a trade standpoint a month ago. But buying is mainly restricted to quick needs, the rapid recurrence of orders compensating for their deficiency in size. First impressions are that present trade is quiet. It is only when totals are reached that the situation brightens, especially when it is remembered that this is July. Heavy Hardware continues a notable department of the trade. The interest lately shown in Bars has imparted an impetus to buying, and there is now said to exist a general inclination among small industrial plants to arrange for their material.

### St. Louis.

(By Telegraph.)

The number of mail orders being received by jobbers and rather limited wants specified emphasize the fact that dealers are not buying much beyond customers' needs. There is surprise expressed by some jobbers that certain lines of fall goods, on which declines cannot reasonably take place, are not now arranged for by the trade. It is apparent that the tendency is to hold back until consumers show greater energy. Some jobbers also admit that the conservative course of retailers has made it necessary for them to withhold in turn specifications to manufacturers. Telegraphic orders are being received for goods which were not liberally provided for the summer trade, and this class of quick shipment requests is expected to extend beyond the usual period. In speaking of trade conditions decided importance is given to the good influence which will be exerted by the returns from generous crops on the buying during the remaining months of this year. The demand for Heavy Hardware is without noticeable change. Small buyers are confining themselves to purchases for immediate wants. One of the prominent factors in the Heavy Hardware trade expressed his conviction that prices for raw material had touched bottom, and acted on it by making some heavy purchases.

## Notes on Prices.

**Wire Nails.**—The trade are not anticipating an especially active market at this season, but the volume of business is said to be up to reasonable expectations under existing circumstances. The trade are buying only in such lots as are needed to meet their early requirements, but it is said that orders are coming in a little more freely. Prices continue without change as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days.

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

**New York.**—The New York market is quiet, as the trade are experiencing the usual midsummer dullness. Improved indications for building are having a somewhat beneficial effect, and Nails are moving a little more freely than heretofore. For small lots from store \$2.60 represents the general price. Quotations are as follows:

To retailers, carloads on dock.....	\$2.48
Small lots from store.....	2.60

**Chicago, by Telegraph.**—Orders maintain a volume quite satisfactory to sellers. July, it is said, is doing rather remarkably well, due to the widespread building activities. Prices are without change, store quotations being \$2.43 for carloads, and \$2.50 for small lots.

**St. Louis.**—There is a light demand at no change in price. Carload lots to retailers are \$2.45, base; less than carloads, \$2.55, base.



**Pittsburgh.**—Orders for Wire Nails are mostly for small lots, and these are not very numerous, but indicate that stocks in the hands of jobbers are low. It is still being predicted that another reduction in price of Wire Nails will be made, and this is probably inducing the trade, to some extent at least, to buy only for immediate wants. We quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in ten days.

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

**Cut Nails.**—There have been no special changes in the Cut Nail market during the week under review. Merchants generally have the impression that prices are relatively high, in view of the cost of raw material, and are accordingly buying very conservatively. While no direct intimation is given of it, the trade would not be surprised by the announcement of somewhat lower prices. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days:

Carload lots.....	\$1.95
To jobbers in less than carload lots.....	2.00
To retailers in less than carload lots.....	2.10

**New York.**—Prices in the New York markets continue somewhat uneven, as there is not entire agreement between the merchants. The volume of business is only moderate. Quotations are as follows:

To jobbers in carload lots on dock.....	\$2.13
To jobbers in less than carload lots on dock.....	2.18
To retailers in less than carload lots on dock.....	2.31
Small lots from store.....	\$2.25 to 2.30

**Chicago, by Telegraph.**—Trade is inclined to be dull. Prices hold at \$2.25 from store, with orders few and of small size.

**St. Louis.**—No great activity. One of the smaller mills in this vicinity has shut down for the week. Price remains at \$2.30, base, from store.

**Pittsburgh.**—Orders are light and only for small lots, buyers believing that prices will go lower. We quote Cut Nails at \$1.95 to jobbers in carload lots, \$2 to jobbers in less than carload lots, and \$2.10 to retailers in less than carload lots, all f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

**Barb Wire.**—Manufacturers report a slight increase in the demand, but trade is not active. The outlook for business during the fall is generally regarded as good. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.50
To jobbers in carload lots, Galvanized.....	2.80
To jobbers in less than carload lots, Painted.....	2.55
To jobbers in less than carload lots, Galvanized....	2.85
To retailers in carload lots, Painted.....	2.60
To retailers in carload lots, Galvanized.....	2.90
To retailers in less than carload lots, Painted.....	2.70
To retailers in less than carload lots, Galvanized....	3.00

Ellwood and Baker Wire is 5 cents and Washburn & Moen Glidden 10 cents per 100 higher than the foregoing prices.

**Chicago, by Telegraph.**—Plain Wire continues a good seller, demand from manufacturers being of a most persistent character and also of generous proportions. Barb Wire is less in demand, sales being at perhaps the low ebb of the year, though seasonably fair. Prices are without change. Quotations for small lots, Chicago delivery, are \$2.40 for Plain Annealed, \$2.75 for Painted Barb and \$3.10 for Galvanized Barb Wire.

**St. Louis.**—Small sales and heavier shipments not anticipated for some weeks. Price for Painted to retailers in car lots is \$2.75, less than carloads \$2.85; 30 cents advance is asked for Galvanized.

**Pittsburgh.**—There is very little doing. We quote Galvanized Barb Wire \$2.80 in carload lots to jobbers, and Painted at \$2.50, terms 60 days net, with 2 per cent. discount for cash in 10 days.

**Plain Wire.**—No change has been made in the prices of Plain Wire. Trade continues sluggish, but with indi-

cations of some improvement. Quotations continue as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes, ( Plain. Galv.	
To jobbers in carload lots.....	\$2.15	\$2.55
To jobbers in less than carload lots.....	2.20	2.60
To retailers in carload lots.....	2.25	2.65
To retailers in less than carload lots.....	2.35	2.75

The above prices are for the base numbers, 6 to 9.

Other numbers of Plain Wire and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).			
Nos.	Base	Galvanized.	
6 to 9.....	\$0.05 advance over base.....	\$0.40 extra.	
10.....	.10	.40	"
11.....	.15	.40	"
12 and 12½.....	.25	.40	"
13.....	.35	.40	"
14.....	.45	.40	"
15.....	.55	.75	"
16.....	.70	.75	"
17.....	.85	1.00	"
18.....		1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

**Pittsburgh.**—Demand for Plain Wire is light, buyers placing orders only for small lots and actual needs. We quote:

	Plain.
To jobbers in carload lots.....	\$2.15
To jobbers in less than carload lots.....	2.20
To retailers in carload lots.....	2.25
To retailers in less than carload lots.....	2.35

Galvanized Wire up to No. 14 is 40 cents advance on Plain, Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. discount allowed for cash if paid in 10 days from date of invoice.

**Wagon and Carriage Springs.**—There has of late been more or less irregularity in the market for Springs, but the manufacturers refer to the condition at present as being somewhat improved and prices are more regular.

**Solder.**—In view of the increased cost of some of the raw material prices for Solder are very firm, and some of the manufacturers are anticipating an advance in the near future.

**Cotton Belting.**—In view of the high prices of Duck, Linseed Oil, &c., the prices of Cotton Belting are firm. If the present condition of things continues it is probable that an advance will be made before long.

**Hollow Ware.**—The associated Hollow Ware manufacturers, including the following: Menard Hollowware Company, Menard, Ill.; Indiana Mfg. Company, Jeffersonville, Ind.; the Jones Hollowware Company, Baltimore, Md.; Columbus Mfg. Company, Columbus, Ohio; Blacklock Foundry, South Pittsburg, Tenn., and Phillips & Burdoff Mfg. Company, Nashville, Tenn. held their monthly meeting at Atlantic City, N. J., July 11, at which time prices in respective lines were reaffirmed for the coming season, the only change that was made being in English Pots, which were changed from pound price to a piece basis, as follows:

½ gallon .....	15c.	6 gallons.....	45c.
¾ gallon .....	18c.	8 gallons.....	65c.
1 gallon .....	20c.	10 gallons.....	90c.
1½ gallons.....	25c.	12 gallons.....	\$1.15
2 gallons.....	28c.	15 gallons.....	1.35
3 gallons.....	30c.	18 gallons.....	1.55
4 gallons.....	35c.	20 gallons.....	1.75
5 gallons.....	40c.		

Prices on other goods are as follows:

Plain Stove Ware, discount.....	.65 and 10 %
Ground Ware, discount.....	.60 and 7½ %
Enameled Ware, discount.....	.55 and 5 %
Gem Pans, \$6 list.....	\$1.50
Gem Pans, \$7.50 list.....	1.75
Gem Pans, No. 19.....	1.10
Gem Pans, No. 20.....	2.20

Light Sugar Kettles, without Bails:

8	10	12	15	20	25	30	35
50c.	60c.	70c.	82c.	\$1.10	\$1.40	\$1.80	\$2.10

Balls, 8 to 15 gallons, inclusive, 15c. extra.

Balls, 20, 30 gallons, inclusive, 25c. each extra.

Heavy Sugar Kettles.....\$2.25 per 100 pounds  
Country Hollow Ware..... 2.40 per 100 pounds

All attending report the usual midsummer and off season dullness of business. This brief respite is referred to as very welcome, giving the manufacturers necessary time to shut down, take stock and overhaul machinery, which has been neglected the past 12 months, on account of the large volume of business that has kept all their works busy. They are glad to avail themselves of the opportunity to put their plants in good shape to receive the trade when it does come.

**Fayette R. Plumb.**—The discount sheet used by Fayette R. Plumb, Philadelphia, under date July 2, shows a general revision of prices, and in many cases a slight reduction. It is noticeable that in deference to the views of the trade the terms are now 60 days, or 2 per cent. discount for cash in 10 days, instead of net cash as heretofore.

**Oils.**—*Linseed Oil.*—The Linseed Oil market is firm and steady, with no change since our last report. Raw Oil is quoted at 67 cents per gallon and Boiled Oil at 69 cents, in five-barrel lots, less than that quantity in barrels bringing 68 and 70 cents respectively. The new crop of seed seems to be held at a high price, the future of the market depending largely on the harvesting of the later crop of Flax in September and October.

## Letters from the Trade.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Jobbers Selling to Consumers.

From a prominent house in the South, doing a business principally retail, we have the following advices in regard to a petition of jobbing houses and the somewhat strained relations existing:

We have been reading with interest the letters from the trade and very frequently noticed reference made to the jobber and his attitude toward the retailer.

In this city there are three business houses who claim to be jobbers, yet they will chase the contractors for an order of two or three kegs of Nails, or for Hardware trimmings, as if their business depended upon the sales of these articles.

We have been in business but five years, and do quite a lot of jobbing ourselves, although we do not travel regularly; our store is 100 feet deep and 100 feet front.

We pay most of our attention to the city trade, and on a number of articles we have refrained from carrying a stock; we preferred to buy from the local jobbers.

Just imagine the jobbers refusing to sell us goods! Yes, actually refusing to sell us for cash or otherwise, and if one of our salesmen happened to enter their store trying to buy something at their regular retail price, he being ordered out of their establishment!

We have been compelled to buy a number of articles in considerably larger quantities than we wanted in trying to protect ourselves against "retail jobbers." These self same retail jobbers have actually refused to buy from traveling men who have called on us; however, we are pleased to say that these manufacturers' representatives would not be bulldozed in this manner, and they continue to sell us goods whenever we are in want of anything in their line.

These retail jobbers have attempted to embarrass and prevent us from selling goods to contractors who buy one or two kegs of Nails by putting the price under our cost as they thought.

Two of these so-called jobbers are members of the State Jobbers' Association, and if we are not mistaken

one of them attended the last Southern Hardware convention held at Old Point Comfort.

We presume this will continue as long as we are in business.

### Lower Prices for Export Trade.

The following communication from Minnesota touches on the propriety of manufacturers making lower quotations to foreign than to domestic buyers, a subject which was touched upon in this column a few weeks ago:

In your issue of July 5 a New England manufacturer asks the question whether American manufacturers are justified in selling goods for less abroad than at home? He rightly says that there should be a good moral reason for doing so, if it be done.

Is it not good morals to pursue that course which will develop to their greatest capacity the iron and coal mines and cotton and iron and flour mills of the country, and to still increase their capacity?

If it be so, is it not wise to pursue that policy which will carry off surplus products in times of drought in trade, and bring in gold in exchange for labor, even at cost price?

Is it not wise and just to exchange labor for gold with the balance of the world, even at that ratio? If it be so, then should not our mills and mines (especially our mills) be operated to their utmost capacity, even if the surplus has to be sold abroad at cost? The gold exchange is the measure of our prosperity and greatness. A gold balance against us is what kept us a debtor nation for 100 years. Enormous expenditures at home for railways and other internal improvements, all paid for out of the soil, have kept the American mind intent on the interior—made us a nation of introspectives. We have now arrived at the circle of our national experience and development, and must meet the world's masters of finance and industry on their best and at their lowest level. Cheap goods abroad will alone enable us to do this successfully. That is the moral and the practice of it.

### Sweating Show Windows.

Referring to the article on keeping show windows from sweating, which appeared in our issue of May 31, W. P. Walter's Sons of Philadelphia, Pa., write as follows:

The writer read it with interest, and concurs with you in regard to the main point of keeping the temperature of the window the same as outdoors. There is, however, one point which seems to have been overlooked by your correspondents, and that is the kind of goods shown in the window. For Building Hardware and Housekeeping Supplies it may answer very well to have direct communication with the outside air; but it will not answer where the window is filled with fine *Machinists' Tools*, as we know from experience that the outside air will rust the Steel Rules, Micrometers, &c., and the dust will enter through the holes no matter how fine the mesh of the Wire placed over them. Wire of fine enough mesh to exclude the dust will also exclude most of the air. For fine Tools a can of "Humidine" in the window is better than the outside air.

### Fayette R. Plumb's Catalogue.

**F**AYETTE R. PLUMB, Frankford, Philadelphia, Pa., has just issued an illustrated catalogue and price-list showing a full line of Hammers, Hatchets and Sledges, Blacksmiths', Miners' and Railroad Track Tools, Picks, Mattocks, Grub Hoes, &c. This volume is a condensed catalogue for 1900 illustrating all goods shown in their catalogue of 1898, with some new additions to the line consisting of a few Hammers and a special line of Hatchets. Their telegraphic code, which was introduced in 1888, has been supplemented with an addition of a few new phrases, and the code should be consulted before ordering by wire. In front of the book are four pages, entitled "Plain Talk About Tools," in which the special merits of this entire line are specifically referred to.



## RETAIL HARDWARE ASSOCIATION.

### THE MINNESOTA RETAIL HARDWARE DEALERS' ASSOCIATION: WHAT IT HAS DONE AND HOW IT CURTAILS TRADE ABUSES.

*The following paper was read by E. H. LOYHED of Faribault, Minn., at the recent meeting of the Michigan Retail Hardware Dealers' Association at Detroit. It is of special interest in view of its careful discussion of existing trade conditions, and its statement of the methods of working adopted by the Minnesota Association, which is regarded as one of the most successful of the State organizations:*

In the days of our youth we were taught that the Garden of Eden was on the Euphrates, that the earth was about 6000 years old, and that there were three learned professions, which were represented in solemn pomp by our ministers, lawyers and doctors, in the order named.

To-day you suspect old mother earth of being several millions of years along in life, you incline perhaps to the belief that Eden may have been in Java, and you find the gentlemen representing those three professions, dressed without distinctive signs of their calling, "hail fellows well met," and admitting "there are others."

In countless ways ideas accepted by the world in our younger days are discarded now. What we believed in then, or what we believe in now, may either or both be illusions, but in the practical matters of life it behooves one to be abreast of the times. We must not refuse to use the telephone just because our grandfathers never used it.

#### Necessity of Organization.

In the business world there are men to-day who do not see the use or value of organizing, with other men in the same business, associations for their mutual protection, and for the advancement of their own interest just because those associations did not seem to be necessary in times gone by. They are waiting for good crops with abnormally high prices, for a change in the political party in power or for that new railroad to bring their trade back to its former easy going prosperity, but they will wait in vain. Twenty-five years ago, when the Hardware dealer from the Mississippi Valley went to visit in New England, he compared the rushing trade in his own store with the slow going business of his Eastern friend. He smiled perhaps at the little devices that he saw for gaining customers at the 5-cent counter and the penny business. Now that the "West" has moved on hundreds of miles beyond him he finds his trade growing more and more like that of his New England brother, with the additional menace of the department store and the catalogue house.

**CHANGED CONDITIONS.**—He now knows that his large sales in those good old days were not due so much to his superb energy and the tremendous buying capacity of his customers which he had supposed was as much an enduring part of the "West" as was its geography, but was due to conditions which exist but once in the history of our land, and which have now passed forever.

His whole State in those days had not the population which now dwells within its largest city, but the railroad, steamboat and the prairie schooner were bringing in a multitude of customers every day. The emigrant, dissatisfied with his Eastern environment, and the fair haired sons of Northern Europe, who were passing beyond the outposts of our civilization to found new homes, had the primitive wants of the pioneer, and a simple stock could supply them. Locks, Nails, Hinges, Cooking Utensils, a few Tools and a small assortment of Cutlery made a Hardware stock in those days.

**COMPETITION GREATER AMONG BUYERS.**—Competition among buyers was greater than among the sellers, and the dealer faced but few of the complex problems of to-day. He bought but few kinds of goods, and he merely had to see that he did not get beaten out of the pay for them. The selling took care of itself.

To-day he is obliged to carry a multitude of lines that were undreamed of then, and he finds that department stores, by dint of advertising and use of the latter day cheap, quick transportation, are depriving him of his best trade and making his store a place for people to buy only such goods as the department stores do not

care to keep; goods of but little profit to the dealer, but which nevertheless may be of supreme necessity to the customer.

**AN OLD STORY.**—We are continually hearing about organizations and unions being the order of the day, as if it were some new idea. It is as old as history. The evil to be guarded against is the only novelty. We are simply proceeding along well established routes, and developing prehistoric ideas in conformity with modern conditions. The isolated individual frequently finds himself in the position of not being able to cope successfully with conditions that jeopardize his safety or his well being, and he finds these conditions changing according to the age in which he lives. In a primitive state the one thing aimed at was to secure personal safety from savage beasts, and so he formed an association of lake dwellers, whose houses, perched on piles, composed a village where all could dwell securely.

As the wild beasts disappeared danger to the individual came from other men, and these associations became tribes, and finally walled cities were built to withstand outside invasion.

**COMMERCIAL WAR.**—We have wars to-day, but ours is a commercial age, and war is seldom known unless to gain commercial ends.

Commercial strife, however, is almost as bitter as military strife on the field of battle. We are entitled to "life, liberty and the pursuit of happiness," and the courts protect us, but when it comes to the pursuit of wealth the battle seems to be with the strong, and so our various modern trade and business organizations have come into being and the weakness, the fallibility of the individual becomes the strength and power of the union.

**UNIVERSAL COMPETITION.**—The most difficult idea for a man to comprehend in the retail trade is that the resistless force and terrific results of competition are general and widespread. Unless he will look about and study its effects in other localities he will be apt to feel that he alone is the special target for the slings and arrows of misfortune. If he will investigate he will find that competition is everywhere to-day. He will find it in its greatest force where modern business facilities exist in greatest perfection. He will also find that it is not a century old, but that it came into existence with the introduction of power machinery, by means of which overproduction is so easily brought about. When he sees the results of the so-called cutthroat competition he begins to doubt the truth of the maxim which he heard in childhood, "Competition is the life of trade."

He sees that the modern trade appliances, the railroads, the steamship, the telegraph and the telephone, working together with power machinery, allow the quick massing of merchandise under the most favorable circumstances, and he finds that goods are gladly sold at almost any profit so surely, quickly and accurately can they be replaced.

**OUTSIDE COMPETITION.**—In addition to his strong local competition he finds the mail, the express and the cheap fast freight delivering goods from the department stores, catalogue houses and the retailing jobbers to his own customers. Recognizing the fact that the time was ripe for Minnesota Hardware dealers to join forces for self protection, Chas. F. Ladner of St. Cloud, at the expense of a good deal of time and money, got a number of Hard-

ware retailers together in 1897 in St. Paul and an organization was perfected. We had that first year somewhere about 100 members, but thanks to the untiring energy of men like Ladner and our president, James O'Brien of Crookston, coupled with the aid of an extremely competent secretary, we are now, in our third year, about 500 strong and growing. We found so many matters that militated against our success at the start that we would never have made any headway but for the energy and ability of these men. Most men expect to accomplish a lot of reforms at once, and if they don't succeed along the whole line they want to drop the matter. There is a class also who are willing to belong to such an institution but expect the "other fellow" to do all the work while they stand back and criticise. Here, again, we have been fortunate, both in our officers and in our membership. We all know that "Rome was not built in a day," and we can see such progress now that we feel sure of ultimate success, when our body has a greater membership and we secure the co-operation of other States.

#### An Issue with Jobbers.

When that time comes we shall have influence enough to enforce all legitimate demands and we believe from the growing enthusiasm in our own and in other States that that time is not far distant. The report of our secretary in 1898 shows that our local jobbers claimed that there were 2500 dealers selling Hardware in the State, which means that 2500 firms or persons were regularly trading with them and receiving their circulars. Upon investigation he found that their list included "well diggers, tin shops, blacksmiths, repair men, junk shops and supply houses," and that there were but 1300 retail Hardware dealers instead of 2500. This cut off nearly half the number of customers which the Twin City and Duluth jobbers had in Minnesota, and these jobbers, probably realizing that our success was their success and not being overcheerful in regard to the extraordinary growth of the supply houses which they had helped to build but which now buy direct from the factories, and from the further fact that we had an aggressive organization, promised not to retail any more and not to sell to the supply houses.

**PROMISES REDEEMED.**—These promises have been kept. The only troubles we now have with jobbers are those from outside the State, and as they learn that we are watching them they also fall in line. Our secretary wrote to about 400 firms and manufacturers outside our State who sell goods to us, stating the object of our organization, and we have secured the co-operation of a large number of them. An instance of a matter under consideration at our last meeting will show what we have to contend with. A jobber known as "favorable" and who does a large business in our State, doing business, we will say, in Chicago, sold 500 X Y Z Freezers to a department store in Minneapolis for direct shipment. Now the X Y Z people are friendly to us and would not knowingly ship goods to that department store, so the Chicago jobber had them shipped to "J. F.," or some other initials, which were not the initials of the Minneapolis firm. Our secretary became informed of the transaction and we will know the result of his correspondence with the Chicago firm when the next "pink list" is issued. If the firm is reported "unfavorable" they will wish they had never sold those Freezers.

**WHEN CONSUMERS BOUGHT OF JOBBERS.**—There has been a time in Minnesota when nearly every customer who was so inclined bought of the jobbers. If a repair man wanted 50 feet of Wire Screen he wouldn't pay the dealer 1/2 cent profit. He sent to a jobber and bought it. When he figured his freight he had perhaps paid more than that, but he had the satisfaction of knowing that he had bought it "at wholesale," and he was continually trying not to trade at home where he earned his living. No one blames the jobber. Present conditions were of slow growth. When he first started he sold only to retailers, but competition became stronger and stronger and he finally sold to these people, not so much be-

cause he wanted to, but because his competitor would if he did not. When an organization such as ours insisted that he should stop that kind of business he was no doubt glad to do so. It is different with the supply house. The supply house is practically a creation of the jobber, and the jobber didn't know what he was doing when he created it. He thought it was a very nice thing when the buyer from a supply house came in every morning with a constantly increasing list of wants and paid the cash, but he overlooked the fact that his retail customers were therefore prevented from selling these same goods. When the supply house got big enough to buy from his factories and in as great or greater quantities he suddenly discovered that his retail trade was not selling as many of these same goods as formerly, and by the same token he wasn't either.

**ON WHAT CONDITIONS RETAILERS WILL HELP.**—Now he wants the retailers to help him out, and the retailer will do it if the jobber won't retail or sell sort up orders to the supply house. The interests of the wholesaler and retailer are reciprocal.

In a letter lately received from our secretary he says, "The growth of our association, in my opinion, can be attributed to the advanced stand taken when our resolutions were adopted. To this we have adhered, not only to the letter of the law, but to its spirit as well. We have no half way station anywhere along the line, and we make no compromise with any violators of these resolutions under any circumstances whatever.

"Those not with us we give the benefit of the doubt of being against us and act accordingly. We are the only Hardware association that issues a 'pink list,' or, in other words, a list of jobbers and manufacturers who seek the trade in our State wherein they are reported favorable or unfavorable to our association work."

#### Pink List Persuasion.

The manufacturers of a Refrigerator may think it is all right to round out a trip through Michigan by selling a catalogue house a carload or two at a much less price than you paid, in order to dispose of his surplus, you know, but if your secretary should write him a polite note, calling his attention to a few matters, and would also write the Minnesota secretary, for instance, the Refrigerator man would think twice before he again disposed of his surplus. It is not pleasant for a manufacturer or a jobber to be on the "pink list" of a State wherein he desires trade.

**A HARDWARE STOCK.**—Our association is asking nothing unreasonable. The Hardware business is peculiar in that it has to do with so many necessities that are valueless unless some one actually needs them, and so many goods which cannot be used as substitutes. So many goods, too, whose profit will not pay the interest on the investment, so seldom are they called for, but which the dealer finds he must carry. This class of goods, while of special convenience to the customer, is never carried by the supply house or department store. If a customer wants a Bolt or an odd sized Screw he cannot substitute a Clothes Wringer or a Pitchfork. The Hardware store is an accommodation to the customer as well as the customer to the Hardware store. He may go without a new piano or that new carpet he was expecting to buy, but if the Plunger breaks in the Cistern Pump or the catalogue house did not send the Screws with his Barn Door Track it is very handy to be able to step into the Hardware store and get them, but just the same the Hardwareman must have some of the trade in the more important lines or he won't be here to supply the Pump Plunger and the Track Screws. A man can't live by selling only Nails, Barb Wire and emergency repairs. The catalogue house does nothing to support your home town. If there is a fair to be gotten up or a celebration of any kind you contribute. If there is a church to be built within trading distance you subscribe, and if some poor fellow is injured or dies leaving an impoverished family you add your mite.

Your advertisement in your local papers costs you



several hundred dollars a year. The assessor can find your stock, and you pay more taxes in proportion to your wealth than any one except your brother store-keepers. Finally, there will come a day when the local undertaker and the livery man will turn an honest penny because you have been living in the town. Living and dying you spend your money there. These various contributions, voluntary or involuntary, on your part are avoided by the non-resident supply house. There is one thing certain, the manufacturer and the jobber cannot continue selling the retail supply house at less prices than they sell the regular trade and expect to have any regular trade left.

**THE JOBBER'S VISION.**—The jobber is evidently about satisfied that there is nothing in it for him to continue so doing and the question is now up to the manufacturer, and when he considers the dictatorial attitude of these modern Molochs he will find but little pleasure in the reminiscence. What has caused the tremendous increase in the catalogue houses, fair stores or whatever we may choose to call them? Is it because they sell cheaper than others? If so, how can we account for the sudden riches and the marvelous prosperity of their owners? It would seem as though they had used a larger part of their Hardware line to make leaders of and have sold the remainder of their stock at about such prices as they choose to ask. They have hypnotized the man they buy of and the woman they sell to, and realize the gambler's maxim that "there is a sucker born every minute." "'Tis distance robes the mountain in its azure hue."

The frugal housewife scans the Sunday advertisement and on Monday hastens hot foot for a bargain in Base Burners. She doesn't inquire prices at her home store, because she knows from the wording of the "ad." and from the beautiful cut of the Stove that she can buy in the city much cheaper than she can at home from the man who patronizes her husband.

**TROUBLES.**—When the Stove arrives the trouble begins. It must be blackened, put together and set up. This is where her husband gains a bit of experience. When the Stove is at last set up he feels as though he had earned rather more than the imaginary sum his wife had saved on her purchase, besides feeling that it was very fortunate that he could drop into the local dealer's and buy the Damper, the Coal Hod or the Taper Joint that the city dealer didn't send, and he will frequently wonder if he has jeopardized his chance for peace beyond the grave by his remarks when he was setting up the Stove. You must often sell "on trial," or guarantee, or some foolishness of that sort. The catalogue house never does. You may try to get \$30 for a Thresher Belt that you warrant. Your friend who wants one reads in the paper that Smith's Supply House will sell him one for \$28.90. He sends in his money with his order. In three days the Belt comes to pieces. In response to his written protest to the house he receives some beautiful words of sympathy and an offer to ship another Belt on receipt of another \$28.90. He will probably buy no more Belts of that house, but he figures to get even by buying something else. So after studying the catalogue with great care he sends in \$11.99 for a \$75 fiddle. It is about useless to attack this evil by educating the customer. He is too numerous. He is the same man who buys wheat options, green goods, gold bricks and Belgian hares. We must get at the jobber and the manufacturer who sell these concerns. Let them choose between the supply house and the retail Hardware dealer, and let the various Hardware associations see that they live up to their promise.

**ARE USED BY DEALERS IN OTHER LINES.**—Every retail Hardware dealer has seen many of the goods he deals in placed on sale and used for leaders in grocery, dry goods, fair, racket and second hand stores. He has noticed that these goods are sold at or below cost to influence the trade in other lines. The grocery man gives away Tinware as prizes for baking powder. The dry

goods store sells Mrs. Potts' Irons below cost to bring customers to a white goods sale. The fair or racket store does the same with a lot of Tinware in order that a job lot of plaster of paris statuary may be dumped on a gullible public. The second hand man does not care what he gets for his Tinware. He quotes any old price, for by so doing he may sell a bedroom set at several hundred per cent. profit. In short, there seems to be a conspiracy on the part of these and other dealers to use articles that belong to the Hardware trade for leaders.

#### A Chapter on Fire Insurance.

We know in Minnesota that we could accomplish many reforms along this line if we could keep our members continually interested in co-operation, and that matter was solved by A. C. Hatch of Battle Lake, who organized the "Retail Hardware Dealers' Mutual Fire Insurance Company." We now have something to present to every dealer that shows him how he can save some money by joining us. He therefore joins and by so doing he aids us in following up and adjusting matters of vital import. We have patterned after the Retail Lumbermen's Insurance, which has been in existence several years and which has reduced their insurance to about one-third of the amount they formerly paid. Besides paying all losses at this low rate they have accumulated a reserve fund of about \$60,000.

**INSURANCE PLAN EXPLAINED.**—Our company takes no risks smaller than \$500 and none larger than \$3000 on a single stock. Last year in Minnesota the retail Hardware dealers paid out in premiums to the board companies something like \$75,000. The fire loss was less than \$3000, making over \$70,000 that we contribute in one year to pay losses in other lines of business, dividends to non-resident insurance companies, and the expense of doing their business. Under our system of mutual insurance we will pay only the actual loss and the trifling office expense necessary to the management of the business. The most difficult part of our business is to get a dealer to investigate our system. When he does investigate he joins us. The man in a brick building paying 1 per cent. or less says off hand, "I don't propose helping some one paying 5 per cent. to carry his insurance." Another says, "I want to insure for safety, I don't like these mutual companies."

Our system positively and effectively answers both of these arguments. A member applying for insurance incloses a check for the same amount which he would pay a board company. For instance, if his board rate is 2 per cent., and he wants \$2000 insurance, he sends a check for \$40. This \$40 is not lost to him forever, as in the case when he pays to a board company, but is credited to his account, and at the end of the year he receives a statement of his share of the losses, and of the amount still standing to his credit.

In the case mentioned his losses would be about \$16 and his credit balance \$24. By remitting then \$16 he will again be insured for another year, or if he wishes to get out of the company he will receive a check for \$24. If his board rate is 1 per cent. and he wanted a \$2000 policy he would remit \$20 instead of \$40, his loss would be about \$8 instead of \$16 and he would have a credit of \$12, but when he finds that his friend in the 5 per cent. rate would have to remit \$100, and that his loss would be in the neighborhood of \$40 he sees that there is no discrimination. The 5 per cent. man on his part finds that as his loss is \$40 his insurance has in reality only cost him about 2 per cent., instead of 5 per cent., and he, too, is pleased. No member is therefore assessed specially after a fire, and there is no danger to any one who is insured of the loss not being paid, because the money is always on hand.

**INSURANCE WRITTEN SINCE JANUARY, 1900.**—Since the beginning of the year we have written over \$300,000 in risks, and since our dealers have begun to understand the system new applications are coming in at such a rate that we expect to write a million dollars before the end

of this year, and the sum of money saved to the merchants will be very large.

**SOME CONDITIONS.**—We are not allowed by the laws of our State to solicit insurance outside our borders, but we are permitted to write insurance for non-residents who apply, although our by-laws will only accept applications from dealers who are members of their own State association. We are receiving applications from remote towns and even from all surrounding States.

**RISK FROM CONFLAGRATION.**—Separated as retail Hardware stores are by distance, there is no possibility of a general conflagration. The class of goods carried and the class of men who own them make our risks light.

**FOLLOWING AN EXAMPLE.**—It is our hope that members of other State Hardware associations will carry policies with us, and, after participating in their benefit, will form like associations in their own States. When this is done dealers with large stocks can apportion their entire insurance so that it may be carried by the mutual companies of the various States.

#### Curing Evils.

The Hardware dealer will also notice that the evils that menace us are not growing less, that matters are not regulating themselves, and that some beneficent power outside of himself is not going to regulate it, either.

If the retail Hardware business is to continue as a business of itself and not to become a part of some bargain store or junk shop, something must be done, and that something is to organize—that is, to create a force that will entitle our requests to be granted not only a respectful hearing, but a cheerful acquiescence.

Having now in Minnesota our organization, our "pink list," and our insurance company, we believe that we can remedy many of the evils that were destroying and lessening the volume of our trade. We ask your co-operation in order that the end may be gained with greater certainty.

### Chicago Retail Hardware Dealers' Picnic.

**T**WENTY-ONE crowded coaches left the Northwestern Station, Chicago, on Wednesday, 18th inst., for Fox River Grove. In the coaches were 1200 of the retail Hardware dealers, their families and friends. The Northwestern made a fast run, arriving at the grove on schedule time, and every one present prepared to enjoy himself. The day was an ideal one, not a cloud in the sky, and the heat of the sun was tempered by a pleasant breeze which swept through the grove and made the weather all that could be desired. The committee acted wisely in arranging to have the picnic held at Fox River Grove, which is without doubt the best ground for such a purpose within 100 miles of Chicago. After lunch had been served an interesting programme, in which were 19 events, was carried out. There were bowling contests and a number of races for married and single people of both sexes, target shooting, races for tinners, salesmen and fat men, besides fishing contests, fancy dancing, and, last of all, a nailing contest for ladies only. The prizes were numerous and many of them valuable, including Bicycles, a Refrigerator, Ranges, Stoves, Cutlery and other Hardware articles contributed by both manufacturers and jobbers.

The following are the committees having the picnic in charge and they are to be congratulated on its success:

#### EXECUTIVE COMMITTEE.

Tony Engelhardt, president; W. B. Costello, treasurer; Fred Rubling, secretary; H. E. Gnadt and J. F. Borchardt.

#### REFRESHMENT COMMITTEE.

L. Rosenberg, chairman; Fred. Schanze, Geo. Pfeller, L. Herzog and H. C. Pepper.

#### ENTERTAINMENT AND GAMES.

D. McLaughlin, chairman; Jas. Gormley, Leo Krue-

ger, Geo. A. Engelhardt, Martin Engelhardt and A. Rubling.

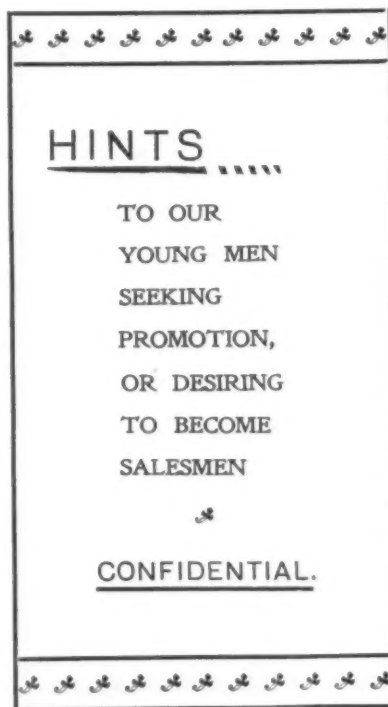
#### TRANSPORTATION.

J. L. Smith, chairman; Leo Krueger, G. A. Neebee and G. R. Lott.

### Suggestions for Hardware Clerks.

**T**HOSE occupying clerical positions are naturally desirous of rising to places of more responsibility, but they not infrequently disregard the conditions on which promotion is usually dependent. Besides a readiness to perform their allotted tasks with promptness and fidelity and show a willingness to make themselves useful in any direction in which their services may be required, a knowledge of the business in its details is exceedingly important. Instead, however, of seeking to acquire a thorough familiarity with everything connected with the trade, many clerks are disposed to be restless, waiting for the advance which does not come, and to which, in fact, they are not entitled. In the Hardware trade there are a multiplicity of details to be mastered, and the ambitious young man will find many things to be learned before he can regard himself as a thorough Hardwareman.

These remarks are suggested by a pamphlet which has been issued by a prominent jobbing house for private circulation among its employees. It contains so much desirable advice put in a sensible and practical way that we take pleasure in republishing it for the benefit of Hardware clerks, whether in wholesale or retail establishments:



"There is no better investment of a young man's "pocket money" than the purchase of a good book, or of some part of his leisure time than the pursuit of some practical study.

"The power of doing a little depends on knowing a great deal, and a stone fit for the wall is not left long by the roadside."

There are good reasons why a large business house should fill vacancies, among the advanced positions and on the road, by promotion, rather than by help acquired from outside.

It is desirable for us to adopt this policy as far as possible. It remains with our employees to aid us in executing this plan successfully. You will need to develop a spirit of ambition, loyalty and research to be fitted for such promotion. A good Hardwareman was never made without practical study and careful, systematic methods. In short, "knowledge of details is the



basis of success." Getting out goods like a machine a short time will not give you such knowledge.

The daily demands of business are such that our experienced men cannot spare sufficient time to post you in detail—besides, information acquired by your own efforts is well learned and will become better fixed in your mind. Some self denial and courage is imperative to learn the Hardware business as it should be learned. It often seems to us that many who seek promotion do so with a superficial idea of their qualifications and fitness. We want to urge upon all who have a laudable desire for advancement the necessity of placing alongside this desire the knowledge of details and tact for applying same. To illustrate: One of our ambitious clerks asking for a first-class place on the road could not tell what "Half and Half Solder" meant; another did not know a single size of Iron carried in stock; another was asked the meaning of 14-oz. Copper, and replied, "14 oz. to the sheet," and had little or no idea of Wire gauge as applied to numbers of different metals. One could not tell the application of the term "Half Hatchet;" another did not know Cut Tacks from Round Wire Tacks, and a third could not tell a "Left Hand" from a "Right Hand" Lock or Butt.

These are very simple matters, but a prospective buyer soon loses confidence in a salesman who shows weakness in details, or who is not resourceful. Some idea of value must be developed by contact with brands and prices; also a well defined idea of *your own* as to how to approach a customer; a keen sense of turning over the goods at a profit; a shrewd idea of meeting competition and holding trade without sacrificing profit. Confidence in your house and prices enables you to take care of the combined interests of your house, your customer and yourself.

To those who aspire to the road (or other advancement) we give the following items as *good illustrations* of work that should be done in order to obtain the promotion you seek, being only a *very few* of the points a trained Hardwareman should have at his tongue's end, and are given merely to illustrate broader details.

**CUTLERY.**—First, to be familiar with all patterns, and cultivate a taste for certain good sellers to use as favorites in starting an order; then interest the buyer in adopting our line as his. Learn the language of Cutlery, and the terms *Crocus* Polish, Etched Blades, Spear Point, Clip Point, *Sheep Foot* Blade, Speying Blade, Marking Blade, Pen Blade, P. M. S., &c.

**TABLE CUTLERY.**—Understand prices by gross pieces, sets of six pairs, Balance Bolster, Solid Bolster, Lap Bolster, &c.

**BUTCHER KNIVES.**—Hand Forged, Polished Swage, and what patterns are kept in all sizes.

**GUNS AND REVOLVERS.**—Get familiar with the Extension Rib, Bar and Back Action Locks, Patent and Snap Fore End, Laminated, Damascus and Laminated Finish Barrels, Single and Double Bolts, Rebounding Locks, &c.

**TOOLS.**—Learn the application of the terms Bell Face, Adze Eye, Ball Pien, Razor Blade, London Pattern, Filletster Plane, Step, Nosing Plane, Triple Stock, Bastard Cut, Extension Top, Patent Chuck, 6 Point, 4½ Point, &c., on Saws.

**LOCKS.**—Reverse Bevel, Patent Tumbler, Patent Cylinder, 48 Changes, Swivel Spindle, Astragal and Rabbetted Front, Combined Rose, Pass Key, Brass Hub, Revolving Cylinder, &c.

**SMALL TRIMMINGS.**—Electro Plate (or Bronze Plate), Berlin Bronze, Old Copper Finish, Copal Bronzed, No. 3 Finish, &c., &c.

**SHEET COPPER.**—A knowledge of Sheet Copper, sizes, numbers used and values.

**PRESSED WARE.**—Understand terms Planished Finish, Retinned, &c. Know sizes of covers required for Nos. 7, 8 and 9 ware; size covers for 2, 4 and 6 quart Coffee Pots.

**MISCELLANEOUS.**—Triple Motion Freezers, Cleanable Flue Refrigerators, &c. What size ware fits Nos. 7, 8 and 9 Stoves.

**DAIRY STOCK.**—Difference between Elgin and Iowa R. R. Can Stock, IX, INX, and IXXX Setter Bottoms.

**PLANISHED IRON.**—Why it is made 60 inches long in place of 54 inches. Difference between A. & B. Planished Iron.

**WOODEN WARE.**—Dowel, Hoop, Cable, Pat. Fiber, &c. **FORKS.**—Selected and XXX Handles, Cap Ferrule, Pat. Tang, &c.

**GALVANIZED IRON.**—A knowledge of Galvanized Iron, sizes, numbers and values.

**SOLDER.**—Ingredients, brands, values; how made and used, Half and Half, 45-55.

**NAILS.**—Length of all sizes, rating, how many in a car.

**BOLTS AND SCREWS.**—What factories are best known; sizes most used. How to gain confidence of customers when advising them as to good assortments.

**BUTTS AND HINGES.**—What factories are best known, sizes used, how to gain confidence of customers when advising them as to good assortments.

**TIN PLATE.**—Sizes, number of sheets in a box, application, what grade and sizes are used; popularity of brands and grades, including Dairy Stock. What does Terne Plate mean?

**AXES.**—Understand the terms Overlaid and Inserted Steel, Bevel Edge, Heavy Poll, Solid Steel, &c.

These items are only given to stimulate you to acquire a complete knowledge of the whole business, and thus become valuable to its interests. We cannot transform you into a business man; that remains with you. We wish you to know our numbers, sizes, brands and prices as readily as a father knows his boys. If a question comes up that you cannot solve, ask some one who knows and can give you a correct answer and encouragement to pursue your desire to learn the business.

We quote briefly from a trade paper of good repute (The article is headed "New Salesmen."):

"This article only touches upon one phase of the traveling salesman who, like a defective shot, has a short journey. There are many noble men who give dignity and character to the profession of traveling salesmen. They are honorable and straightforward. Their words are to be depended upon. They know their goods. They are not merely catalogue salesmen.

"No man who has mixed in with salesmen to-day, and who has observed and thought of these things, but knows that there is an ever increasing crop of untrained and irresponsible men who are sent out to take the place of salesmen. They are not posted on their goods. They do not know anything about prices. They do not know why prices should be maintained or what arguments to use in maintaining them. They do not take time to investigate statements. They are so 'easy' that they are a temptation to good merchants. Their orders are accompanied with long letters of explanation that they are forced to meet the prices of 'Smith, Brown, Jones Hardware Company.' To expect them to have mastered discounts would be entirely out of the question. To them 80 and 25 per cent. is much better than 85; 60 and 25 is a whole lot lower than 70 per cent. They can sell Meat Cutters at 30 per cent., but they cannot sell any at 25 and 7½. Forty per cent. is a splendid price, but they would not be 'in it' with 33 1-3 and 10.

"The writer of this article has explained to one of these salesmen how to make a slight draft on his house; he has shown him how to write it up. He has shown him that Loaded Shells were entered by the thousand, and not by the hundred; that Anvils were entered on orders each, and not by the dozen. He has called his attention to the fact that when ordering Barbed Wire he omitted to state whether Galvanized or Painted was wanted, two or four point, hog or cattle. He has shown him goods in his catalogue when he claimed his house did not carry them in stock. What does such a salesman know about the collection laws of the State in which he is traveling? What would he do in an emergency?

"When a salesman visits a retail dealer, that dealer expects to learn something from the salesman. He does not expect to assist the salesman in writing up his orders."

## John H. Graham & Co.'s New Catalogue.

JOHN H. GRAHAM & CO., 113 Chambers street, New York, direct Hardware manufacturers' representatives exclusively, have just issued a fine illustrated catalogue of 408 pages, each 11 x 8 inches. In this book, which is cloth bound, are shown the goods of 46 manufacturers making a varied line of Hardware, including Screws, all kinds of Bells, Lawn Mowers, Wrenches, Saws, Tapes, Toilet Clippers, Locks, Shelf and Builders' Hardware, Skates, Curry Combs, Bright Wire Goods, Castors, Faucets, Hinges, Twist Drills, Railroad Tools, Braces, Bits, Weather Strips, Trowels and various other goods of this general character and description. The book will be sent to dealers who desire a copy of it but fail to get one in the distribution. It is an exceptionally complete and comprehensive volume, representing as it does the products of so many manufacturers in the Hardware line.

## Trade Winning Methods.

*This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.*

*A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### USE OF CUTS IN ADVERTISING.

The following communication is from a Hardwareman who has given a good deal of attention to the matter of advertising. His suggestions in regard to the use of cuts may be of interest:

I notice through the columns of your journal that you have taken up the handling of stock cuts suitable for Hardware advertising. It seems to me that this plan should fill a long felt want for Hardwaremen in the smaller towns and cities. From my own experience I know that good cuts for advertising purposes are rarely easy to obtain under such circumstances, whereas they are invaluable for all advertising purposes. The effectiveness of advertising, whether newspaper, booklet, or circular, is greatly enhanced by the use of good illustrations, and it is a singular fact that most dealers in stock cuts for various lines of trade have a very poor assortment for the use of the Hardwareman. Therefore I can see no reason why this department of *The Iron Age* should not prove of great value to the retailer.

#### Effective Use of Cuts.

There are many things in the Hardware store which can be effectively illustrated with very small cuts. Take, for instance, Agate Ware, Tinware and Kitchen Utensils, and it will be found that a cut occupying half or even a quarter of the width of a column will greatly strengthen the descriptive matter accompanying it. By this plan of illustrating each item it will be found that several descriptions and prices can be published in the same space that would be used to display one item effectively without the cuts. It is upon these grounds that I base my theory that your service is worth much more to the retailer than you are charging him for it.

### PERSONAL LETTERS.

Gray Hardware Company, Coshocton, Ohio, find the sending of personal letters a very effective method of getting business.

THE LETTERS are typewritten, stating in a brief, straightforward manner the desire of the company to enlarge their acquaintance among farmers, and to increase their business with them. The completeness and size of the stock is touched upon, and new lines of goods added are mentioned. The ability of the firm to give the most value for the money is also claimed.

MAILING LIST.—The names of farmers are obtained from responsible persons in each township, together with the assistance of one Republican and one Democratic newspaper. The purpose is to have all the names of the best farmers in the county and close attention is paid to securing the names and revising the list often.

RESULTS.—After pursuing this method of advertising for a little over a year the business showed an increase in sales of about \$3000. The company are of the opinion that persons in the country who are not accustomed to receive much mail appreciate a personal letter, and that not only the heads of the families read these letters, but also the children, and that the first time they come to town they are pretty sure to come and see the store. When upon a recent trip through the country a member of the firm found many people who said they had received these letters, and were disposed to be friendly.

### A PENNSYLVANIA MERCHANT'S METHODS.

D. P. Paiste of Chester, Pa., is a liberal newspaper advertiser, both in the amount of space used, which varies according to requirements, and in the frequency with which advertisements appear.

ILLUSTRATIONS, PRICES.—A feature of his advertisements is illustrations of the goods and prices. The latter are generally the prices marked in plain figures on the goods in the store. Occasionally, say three or four times a year, special prices are made on some leading goods, stating in the ad. "to-day and to-morrow" or "for this week only." Very little trouble is experienced when returning to the original prices at the expiration of the time named.

GOODS RETURNED.—One of the rules of the establishment is that customers are allowed to return any goods they purchase if they are dissatisfied. Pains are taken to impress upon customers that any goods bought at Paiste's and not wanted after being delivered at their houses will be called for by the delivery wagon. This method of doing business has gained for the store the reputation of receiving goods returned, for any cause, without question or complaint.

### Request for Catalogues, &c.

THE office of Charles W. Leete, Pottsdam, N. Y., was recently destroyed by fire, and he thus lost a collection of catalogues, price-lists, &c. He is desirous of having them replaced by others and requests manufacturers and jobbers of goods in his line to send their price-lists and other printed matter with discount sheets. His business is that of manufacturer of Water Wheels and Mill Machinery and dealer in Mill Supplies, Steam Pipe Fittings, &c.

### John Chatillon & Sons' Catalogue.

JOHN CHATILLON & SONS, 85-93 Cliff street, New York, have just issued an illustrated catalogue and price-list of Spring Balances, Scales, Butchers' Cutlery and similar goods. Special attention is called to the fact that all Spring Scales of their manufacture have their name plainly on the dial as follows: "John Chatillon & Sons, Makers, New York, U. S. A." In this catalogue is shown a full line of Scales and Balances for all kinds of trade and family purposes. There is also an extensive line of Butchers' Tools, such as Knives, Cleavers, Steels, Meat Choppers, Pocket Cutlery, Mills, Sausage Stuffers and a general line of small goods used by butchers.

L. E. Miller has succeeded to the Hardware, Stove and Tinware business of Wm. Boyd & Son, Anaheim, Cal.

J. H. Parker has disposed of his stock of Stoves, Hardware, Mining and Mill Supplies, &c., in Boulder, Col., to F. C. Moys.

O. S. Stapley has purchased the entire stock of Hardware, Agricultural Implements, &c., of A. Hunstaker, Mesa, Ariz.

T. W. Hauser has succeeded to the business of W. H. Thurston, Hardware dealer, Ames, Iowa.



### M. S. Benedict Mfg. Company.

**M.** S. BENEDICT MFG. COMPANY, East Syracuse, N. Y., issue three catalogues of their Silver Plated Ware and Metal Goods. No. 16 contains 173 large pages and shows Silver Plated Hollow Ware and Flat Ware, many of the Bohemian, Venetian and imported Dresden Ware pieces being handsomely printed in *fac-simile* colors. No. 17 is a catalogue supplement for the 1900 holiday season, showing Ebony Goods, Sterling silver Mounted Toilet Sets, Sterling Silver Manicure Articles, Ormolu Gold and Silver Plated Frames and Novelties and Ormolu Gold Plated Clocks. A third catalogue shows Silver Plated Table Flat Ware made by Wm. H. Rogers, for which they are agents.

### Laughlin Nail Company's Shovel Catalogue.

**L** AUGHLIN NAIL COMPANY, Wheeling, W. Va., who are represented by J. C. McCarty & Co., 10 Warren street, New York, have issued a new catalogue illustrating and describing in detail their full and complete line of Shovels, Spades, Scoops and Ditching Tools. Attention is drawn to the fact that their new buildings for the manufacture of this line of goods have been built and equipped with all modern improvements, and that they are prepared to make a complete line of goods, including Plain Back, Hollow Back and Riveted Back straps. The entire line is made in four grades, branded Glessner (first grade), Dixon (second grade), Skelton (third grade) and Martin's Ferry (fourth grade). The catalogue is comprehensively arranged, showing list and size numbers, dimensions, &c., in connection with each article. Specialties will receive particular attention.

### Trade Items.

**G** EORGE H. ISMON, formerly assistant Pacific Coast sales agent at San Francisco, Cal., for the American Steel & Wire Company, and now assistant general sales agent for this company at Chicago, was treated to an agreeable surprise a few days prior to his departure from San Francisco to accept his new position. His associates in the Frisco office presented him with a handsome silver loving cup, mounted on a pedestal and suitably inscribed. Frank L. Brown, Pacific Coast sales agent, made the presentation speech, dwelling on the popularity of Mr. Ismon, and the general regret at his departure, and wishing him every success in his new location. Mr. Ismon was taken entirely by surprise and responded, briefly but feelingly, thanking his associates for the magnificent testimonial of their esteem.

**J. D. WARREN MFG. COMPANY**, Chicago, have prepared an effective chart or hanger which illustrates 38 designs of the Warren Cabinet Shelving for Hardware merchants. It is an attractive exhibit of many applications of the Warren system of fitting up Hardware stores, as applied to a large variety of articles. The hanger, which is handsomely printed in colors, will be sent to Hardware merchants on application. On the back of the chart a large amount of valuable information is given in regard to the special features of the Shelving, Cabinets, &c., illustrated. By means of these merchants are given a clear idea of the construction and use of this line of Hardware store furniture.

**GEO. A. CORRY**, lately connected with the M. E. Moore Bronze & Plate Company, will represent the Goodwin & Kintz Company of Winsted, Conn., for the coming year, with headquarters at 37 Maiden lane, New York.

**AMES & WINTHROP**, 9 West Fourteenth street, New York, have bought the entire business, patents, &c., relating to the Gate City Natural Stone Filters, formerly manufactured by Epes Sargent. The filtering medium is of porous natural stone and is made in various designs of stone and decorated porcelain Jars, which vary in size and cost. They make three sizes of Pressure Filters adapted to a sink or other faucet. One will withstand 160 pounds pressure and is of large capacity, with two smaller sizes for ordinary city use for about 60 pounds pressure. They also make a round, portable Filter that travelers can pack with their baggage, not occupying more than about 7 x 4 inches.

**WARNER & RUCKER**, 88 Chambers street, New York, manufacturers' representatives, have been appointed the selling agents of the Star Food Chopper, made by Charles D. Brown, 160-162 Duane street, New York, recently illustrated in these columns. They will look after the trade in the New England States, the State of New York and much of the territory in the immediate vicinity of New York City not in this State.

**THOMAS W. MUNROE**, manager of the Allerton-Clarke Company, 97 Chambers street, New York, sailed for Europe, July 25, on the American Line steamer "St. Paul" for a few weeks' vacation trip, visiting London and Paris while away.

**THE GARLAND CHAIN COMPANY**, Rankin Station, Pa., announce the purchase of the Rivet and Pump Chain departments of the American Steel & Wire Company, to which reference was made in our last issue, and mention especially the acquirement of the entire machinery, stock, good will, &c., of the Rivet department of the H.P. Nail Company, Cleveland, Ohio, and the Pump Chain department of Washburn & Moen, Worcester, Mass.

**HOBART B. IVES** of the H. B. Ives Company, New Haven, Conn., is a passenger on the American Line steamer "St. Louis," sailing from New York July 25. Mr. Ives will visit the exposition while abroad and join another member of his family already there.

### Price-Lists, Circulars, &c.

**STEWART & ROMAINE MFG. COMPANY**, 124 North Sixth street, Philadelphia, Pa., have issued an illustrated catalogue and price-list of Single and Double Patent Parallel Expansion Bolts in iron and brass. A great variety of styles and sizes are offered for securing work of any kind to metal, brick, stone or similar forms of construction. It is especially requested that previous editions of this catalogue be destroyed, owing to the great number of changes, to avoid confusion.

**THE TERRE HAUTE SHOVEL & TOOL COMPANY**, Terre Haute, Ind., illustrated catalogue and price-list of Shovels, Spades, Scoops and Ditching Tools of all kinds. Reference is made to greatly improved facilities and the substitution of a full line of Hollow Back Shovels, Spades and Scoops for the line of Axes formerly made, enabling them to supply three varieties of Shovels—viz., plain back, riveted or back strap, and hollow back, or Cleveland.

**BARNES & NUSS COMPANY**, Grand Forks, N. Dak.: illustrated catalogue and price-list of Galvanized Iron Cornices, Skylights, Finials, Ornamental Ridgings, Ridge Rolls, Roof Gutters, Eave Trough, Conductor Pipe, &c.

**IVER JOHNSON'S ARMS & CYCLE WORKS**, Fitchburg, Mass., have just issued a Spanish edition of their Firearms catalogue, illustrating and describing various styles of Revolvers, Shot Guns and repairs for export trade.

**BUHL, SONS & Co.**, Detroit, Mich., wholesale dealers in Hardware, have just issued a large number of extra pages and slips for insertion in their 1897 catalogue, showing a great number of changes in list prices, &c.

### Miscellaneous Notes.

#### Lloyd Mfg. Company.

The Lloyd Mfg. Company, 1610 Central avenue, N. E., Minneapolis, Minn. (formerly the White Mfg. Company), have issued an illustrated catalogue of specialties in wire, a feature of it being a great variety of woven wire mats for doors, tables, coffee and tea pots, &c. They also manufacture woven wire brass wash boards, woven wire toasters and broilers. The mats can be made to show short sentences, firm names, or such words as Hotel, Cafe, Billiards, Lavatory, Show Room Upstairs, Wipe Your Feet, or anything of this character, as may be ordered, the words or sentences being woven in the fabric while in process of manufacture. The point is made that nothing is shown in the catalogue but original goods of their own invention.

#### Universal Holder for Clothes Drying.

**Palmtag & Stull Specialty Works**, 39-43 West Washington street, Chicago, Ill., for whom Hendricks & Class, 150 Nassau street, New York, are sales agents, have found another use for the Universal holder, illustrated in our issue of June 21 last. Besides holding a 1-inch flag staff at almost any angle, &c., they are using it as an always ready clothes drier. A stick 1 inch in diameter is pierced with six holes through which are passed six arms 30 inches long. When done with the device can be fastened vertically against the wall and out of the way.

#### Safety Sled Skate.

The Avery Stamping Company, Cleveland, Ohio, have put on the market an improved form of their Never Break safety sled skates, as here illustrated. The new

feature is in the nature of a leather heel piece to keep the skate firmly in position on the feet of children, for whom they are particularly intended. The skates are made of solid steel, nickel plated, and are packed in pasteboard boxes. From the fact that each skate has

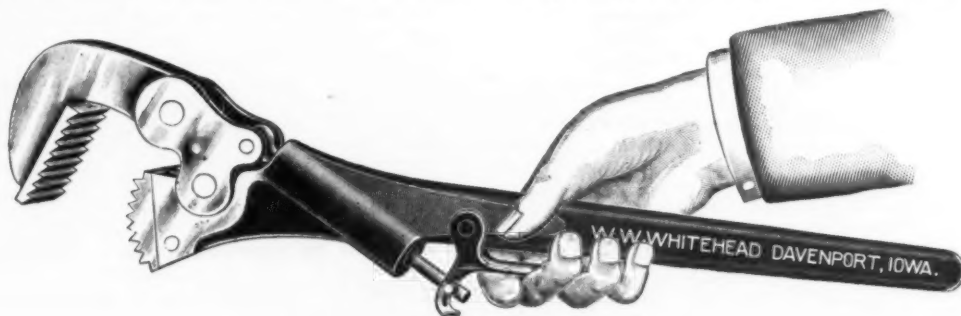


*Never Break Sled Skates.*

double runners no especial skill is required to use them by the most inexperienced, with little danger from injury in their use. They can be furnished in 6, 7, 8 and 9 inch sizes, complete with straps.

### Jackson Pipe Wrench.

W. W. Whitehead, Davenport, Iowa, is manufacturing the Jackson self adjusting pipe wrench, here illustrated. The parts are drop forged from crucible steel. The shank is an inserted stationary jaw with a convex face, in which face teeth are milled. The movable or upper jaw swings on parallel links and is guided by a large tooth at the head of the shank which meshes into a cut made in the lower part of the movable jaw. This feature of it is not seen in the engraving, the cut being under the links. The barrel carries a spiral spring which operates through the plunger to keep the jaws closed. The pressure on the hand lever raises the upper jaw; releasing it causes the jaw to close upon the pipe. The tension of the spring is light and just sufficient to exert the necessary friction between the three points of contact and the pipe, to insure against slipping when pressure is put on the shank to turn the pipe. The harder the pipe may turn the tighter the wrench will grip. The spring plunger and lever do no work except to close the jaws and make possible one hand operation. The spring, plunger and lever could be removed from the wrench



*Fig. 1.—Jackson Self Adjusting Pipe Wrench.*

and it would be just as good without, except that two hands would be necessary to start the grip or exert the necessary friction. This wrench has actual three-point contact, since it can work no other way than by pushing pipe into the corner of the upper jaw. The manufacturer claims this is original with this wrench, the advantage being made that three points of contact reduces the risk of crushing 50 per cent. over two-point contact. Some of the advantages claimed for the wrench are that



*Fig. 2.—The Wrench in Operation*

It is self adjusting, can be operated with one hand, no setting or guessing at the fit, no nuts to bind, no threads to wear out and no frames to spread. All parts are interchangeable. The wrenches are made in 6, 8, 10, 14, 18, 24, 36 and 48 inch sizes, having a capacity of  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in the smallest size up to 1 to 5 inches in the largest.

### Vassar Reversible Cylinder Front Door Lock.

Reading Hardware Company, Reading, Pa., and 96-98 Reade street, New York, have made an advance in lock construction by the introduction of their Vassar patent reversible front door lock No. 1500 $\frac{1}{2}$ , with vestibule latch No. 1505 $\frac{1}{2}$  to match. This new cylinder lock has the advantage of being reversible for either right or left hand doors by removing the cap. It can also be made right hand reverse bevel or left hand reverse



*Vassar Reversible Cylinder Front Door Lock.*

bevel by simply changing the cylinder to one side or the other of the lock and turning the latch bolt to face in the required direction. The turn knob hub is made reversible by being secured to a movable attachment which fits into the cylinder hole on the reverse side of the lock. This lock can be adjusted to suit doors hung in any position, a feature which will doubtless be fully appreciated by dealers, who were formerly obliged to handle different locks for each of the above mentioned requirements. The interior mechanism is ingenious, though simple and very compact, the case measuring

only  $\frac{5}{8}$  inch in thickness, the distance from the face of the lock to the center of the cylinder being only  $2\frac{1}{4}$  inches. This permits the lock to be used on doors having a narrow stile and of any thickness from  $1\frac{1}{4}$  inches upward, a decided advantage, as it is frequently found to be impossible to use cylinder front door locks on account of the doors not being thick enough to accommodate them. The lock can be furnished with either one cylinder or two cylinders, to be operated by key from one

side or both sides, as desired. The same key operates both lock bolt and latch bolt, making it impossible for the possessor of the key to be locked out. The outside knob can be set by stop. The latch bolt has the easy spring movement commonly used in first-class locks. The vestibule latch, No. 1505 $\frac{1}{2}$ , is also adapted for use on inside doors of office buildings and apartment houses.



Invincible Vapor Lamps.

The Invincible Mfg. Company, Wilmington, Ill., are marketing the Invincible vapor lamps, made by them, as here illustrated. Fig. 1 representing their No. 1 lamp, has a retinned tank, iron pipe and brass burner. The tank holds one quart of gasoline and the tank and pipe are black enameled. This lamp is also made in a No. 2 style which has a semi-spherical tank, with corrugations running from the center to circumference. It is brass throughout in the metal parts and has an opal shade. The No. 3 lamp, Fig. 2, has a brass tank, holds two quarts, brass piping, brass smoke bell and brass burner. It is also made in a double style with the tank in the center. The company claim for their burners that they

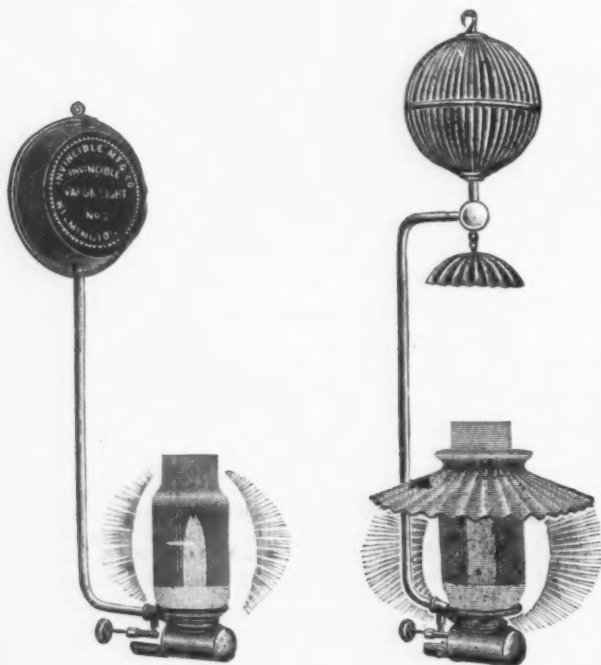


Fig. 1.—Invincible Vapor Lamp No. 1. Fig. 2.—Invincible Vapor Lamp No. 2.

are all brass and not likely to wear out; that by reason of the construction of the burner the gas and air travel far enough to mix properly, thus insuring perfect combustion. The burner has one inner tube, which gives ample distance for a thorough mixture of gas and air. Also that the gasoline travels the shortest distance in generating, not over a half inch in the generator, the passages being ample in size so that if only gasoline is used it will not clog, while if oil gets into it it can be readily cleaned. A self cleaning needle is used so that the jet can be kept free from dirt or any clogging substance.

Union Ratchet Screw Driver.

George E. Gay, Augusta, Maine, for whom John H. Graham & Co., 113 Chambers street, New York City, are direct representatives, is manufacturing the Union



Union Double Action Ratchet Screw Driver.

double action ratchet screw driver here illustrated. The cut shown represents the vest pocket size for bicycle and similar purposes, but the goods are made in regular sizes for carpenters' use in 3, 4, 5, 6, 8, 10 and 12 inch blades with correspondingly longer handles. This screw driver has a movable knurled sliding ring; if moved toward the blade it can be used to drive in a screw; moving the ring toward the handle will permit of withdrawing a screw. When the ring is midway between the two extremes the blade is stationary and can be used either to drive or

withdraw screws, the same as an ordinary screw driver. The handles are black polished hardwood, and the whole device is nicely finished.

A new brick building, strictly modern and up to date, will be erected shortly by C. E. Emerson to take the place of his Hardware establishment, recently destroyed during a conflagration in Susanville, Cal.

CONTENTS.

	PAGE
The Lukens Iron & Steel Company's New Plant. Illustrated.....	1
American Society of Civil Engineers.....	6
American Engineers in Berlin.....	6
The Chicago House Wrecking Company.....	3
The German Machine Tool Market.....	7
Three Failures in the Iron Trade.....	9
A Projected Australasian Iron Works.....	9
The Italian Reciprocity Treaty.....	9
Ferracute Press for Heavy Cartridge Drawing. Illustrated.....	10
The Bliss Armature Disk and Segment Machines. Illustrated.....	11
Central Pennsylvania News.....	12
The Konrad Emery Wheel Guard. Illustrated.....	12
Lake Ore Matters.....	13
Canadian News.....	14
Obituary.....	15
Western Bar Iron Mills on Strike.....	16
The Crucible Steel Company of America.....	16
Editorials:	
Dearer Fuel in Great Britain.....	17
Protecting the Gold Standard.....	17
International Trade in War Materials.....	18
The Ashland Steel Company.....	19
The Loss of Strength in Steel Rails.....	19
Manufacturing:	
Iron and Steel.....	20
Machinery.....	21
Hardware.....	21
Miscellaneous.....	21
The Iron and Metal Trades:	
A Comparison of Prices.....	22
Chicago.....	22
Philadelphia.....	23
Pittsburgh.....	24
Cincinnati.....	25
Cleveland.....	26
Birmingham.....	26
St. Louis.....	27
The British Iron Market.....	27
The German Iron Market.....	27
New York.....	28
Metal Market.....	28
Iron and Industrial Stocks.....	29
Trade Publications.....	30
The New York Machinery Market.....	31
The Philadelphia Machinery Market.....	31
The Cincinnati Machinery Market.....	32
The Cleveland Machinery Market.....	33
Carnegie Steel Company Going Into Rods.....	34
Personal.....	34
Hardware:	
Condition of Trade.....	35
Notes on Prices.....	35
Letters from the Trade.....	37
Fayette R. Plumb's Catalogue.....	37
Retail Hardware Association.....	38
Chicago Retail Hardware Dealers' Picnic.....	41
Suggestions for Hardware Clerks.....	41
John H. Graham & Co's New Catalogue.....	42
Trade Winning Methods:	
Use of Cu's in Advertising.....	43
Personal Letters.....	43
A Pennsylvania Merchant's Methods.....	43
Requests for Catalogues, &c.....	43
John Chatillon & Sons' Catalogue.....	43
M. S. Benedict Mfg. Company.....	44
Laughlin Nail Company's Shovel Catalogue.....	44
Trade Items.....	44
Price-Lists, Circulars, &c.....	44
Miscellaneous Notes:	
Lloyd Mfg. Company.....	44
Universal Holder for Clothes Drying.....	44
Safety Sled Skates. Illustrated.....	45
Jackson Pipe Wrench. Illustrated.....	45
Vassar Reversible Cylinder Front Door Lock. Illustrated.....	45
Invincible Vapor Lamps. Illustrated.....	46
Union Ratchet Screw Driver. Illustrated.....	46
Current Hardware Prices.....	47
Current Metal Prices.....	54

# Current Hardware Prices.

REVISED JULY 24, 1900.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00... 33 $\frac{1}{2}$ @33 $\frac{1}{2}$ @105  
North's... 105  
Zimmerman's... 105

## Window Stop—

Ives' Patent... 25 $\frac{1}{2}$ @51  
Taplin's Perfection... 50 $\frac{1}{2}$

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils... 74@74 $\frac{1}{2}$   
Hay-Budden... 49@49 $\frac{1}{2}$   
Horseshoe brand, Wrought... 49@49 $\frac{1}{2}$   
Hamson... 74@74 $\frac{1}{2}$   
Trenton, Wrought... 84@84 $\frac{1}{2}$   
Buel Pat. Trenton... 84@84 $\frac{1}{2}$   
Vulcan... 84@84 $\frac{1}{2}$

## Imported—

Armstrong's Mouse Hole... 84@84 $\frac{1}{2}$   
Peter Wright's... 94@94 $\frac{1}{2}$

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00... 30 $\frac{1}{2}$

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Common Double Spur, 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Boring Machine Augers... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Car Bits, 15-in. twist... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Jennings' Pattern... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Auger Bits... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Ford's Auger and Car Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Forster Pat. Auger Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
C. E. Jennings & Co.'s... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

No. 10 ext. lip, R. Jennings' list... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
No. 30, R. Jennings' list... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Russell Jennings... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
L'Hommedieu's Car Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Pugh's Black... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
Pugh's Jennings' Pattern... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Smith's Auger Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
Smith's Bell Hangers' Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Smith's Car Bits, 12-in. twist... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$   
Wright's Jennings Bits (R. Jennings' list)... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

## Bit Stock Drills—

Standard list... 65@65 $\frac{1}{2}$ @65 $\frac{1}{2}$

## Expansive Bits—

Clark's small, \$18; large, \$26... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Lavigne's Clark's Pattern, No. 1,  $\frac{1}{2}$  doz., \$26; No. 2, \$18... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Herr's No. 1, \$20; No. 2, \$18... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Swan's... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

## Gimlet Bits—

Common Double Cut, gro. \$2.75@3.25  
German Pattern... gro. \$5.00@5.50

Double Cut, makers' lists... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

## Hollow Augers—

Ames... 25 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Bonney's Adjustable,  $\frac{1}{2}$  doz... \$10.00

New Patent... 25 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$   
Universal... 20 $\frac{1}{2}$

## Ship Augers and Bits—

Ford's... 40 $\frac{1}{2}$

Smith's... 40 $\frac{1}{2}$

L'Hommedieu's... 15 $\frac{1}{2}$ @10 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10 $\frac{1}{2}$   
Watrous'... 40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @55

## Awl Hafts, See Hafts, Axl.

## Awls—

Brain Awls:

Handled... gro. \$2.75@3.10

Unhandle, Shouldered gro. \$3.65@3.85

Unhandle, Patent... gro. 65@70 $\frac{1}{2}$

Reg. Awls:

Unhandle, Patent... gro. \$1@1 $\frac{1}{2}$

Unhandle, Shouldered gro. \$2@70 $\frac{1}{2}$

Scraper Awls:

Handled, Common... gro. \$3.50@4.00

Handled, Socket... gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

## Axles—

Concord, loose collar... 64 $\frac{1}{2}$ @6 c

Concord, solid collar... 64 $\frac{1}{2}$ @6 $\frac{1}{2}$ c

No. 1 Common... 5 c 14 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$  Com. New Style... 54 $\frac{1}{2}$ @54 $\frac{1}{2}$ c

No. 2, Solid Collar... 54 $\frac{1}{2}$ @54 $\frac{1}{2}$ c

No. 7, 8, 11 to 14... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

No. 7, 8, 11 to 14, 10 $\frac{1}{2}$  sets... 60 $\frac{1}{2}$

No. 15 to 18... 50 $\frac{1}{2}$

No. 19 to 22... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Common and Concord, not turned... 15. 50

Common and Concord, turned... 15. 50

Half Patent... 15. 50

## Balances—

Caldwell new list... 50 $\frac{1}{2}$

Pullman's... 62 $\frac{1}{2}$ @4

## Spring—

Spring Balances... 50@50 $\frac{1}{2}$ @54

Chattillon's Light Spg. Balances... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$

Chattillon Straight Balances... 40 $\frac{1}{2}$

Chattillon Circular Balances... 50 $\frac{1}{2}$

Chattillon's Large Dial... 30 $\frac{1}{2}$

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb... 5 $\frac{1}{2}$ @3 $\frac{1}{2}$ @4

## Beams, Scale—

Scale Beams, List Jan. 12, '98... 30@30 $\frac{1}{2}$ @55

Chattillon's No. 1... 30 $\frac{1}{2}$

Chattillon's No. 2... 40 $\frac{1}{2}$

## Beaters—Egg—

Standard Co.:

No. 5 Steel Handle Diver,  $\frac{1}{2}$  gro. \$8.50

No. 10 Cast Handle Diver,  $\frac{1}{2}$  gro. \$8.00

No. 10 St. el Handle Diver,  $\frac{1}{2}$  gro. \$8.00

No. 15 Extra Heavy Steel Handle,  $\frac{1}{2}$  gro. \$15.00

Rival,  $\frac{1}{2}$  gro. \$10.00

Taplin Mfg. Co.:  $\frac{1}{2}$  gro. \$17.00

No. 50 Small Family size... \$8.50

No. 100 Regular Family size... \$8.00

No. 102 Regular Family size, tinned... \$9.50

No. 150 Large Family size... \$13.00

No. 152 Large Family size, tinned... \$17.00

Lyon's Standard size...  $\frac{1}{2}$  doz. \$1.75

Wonder (S. S. & Co.)...  $\frac{1}{2}$  gro. \$7.50

## Bellows—

Blacksmith—

Standard list... 70@70 $\frac{1}{2}$ @55

Inch... 30 32 34 36 38 40

Each... \$2.70 3.95 4.55 5.10 5.70 6.55

Extra Length:

Each... \$4.25 4.85 5.40 5.95 6.50 7.95

## Molders—

Inch... 8 10 11 12 14 16

Dos... \$9.75 7.25 8.50 9.50 12.00 14.50

## Hand—

Inch... 6 7 8 9 10 12

Dos... \$3.75 4.25 4.50 5.00 5.75 6.75

## Bells—Cow—

Ordinary goods... 75 $\frac{1}{2}$ @10 $\frac{1}{2}$

High grade... 70@70 $\frac{1}{2}$ @10 $\frac{1}{2}$

Jersey... 75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10 $\frac{1}{2}$

Texas Star... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

## Door—

Barton G'ng... 55 $\frac{1}{2}$

Gong, Yankee... 55 $\frac{1}{2}$

Home, K. & E. Mfg. Co.'s... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Lever and Pull, Sargent's... 33 $\frac{1}{2}$ @10 $\frac{1}{2}$

## Hand—

Hand Bells, Polished... 65@65 $\frac{1}{2}$ @10 $\frac{1}{2}$

White Metal... 65@65 $\frac{1}{2}$ @10 $\frac{1}{2}$

Nickel Plated... 65@65 $\frac{1}{2}$ @10 $\frac{1}{2}$

Swiss... 60@60 $\frac{1}{2}$ @10 $\frac{1}{2}$

## Miscellaneous—

Farm Bells... 10 $\frac{1}{2}$ @1 $\frac{1}{2}$ @4

Steel Alloy Church and School... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @50 $\frac{1}{2}$

Willmot & Hobbs Mfg. Co., Gong... 70 $\frac{1}{2}$

## Belting

## Rubber—

Common Standard... 70@10@75 $\frac{1}{2}$

Standard... 80@10@70 $\frac{1}{2}$

Extra... 80@80 $\frac{1}{2}$ @10 $\frac{1}{2}$

High Grade... 80@80 $\frac{1}{2}$ @10 $\frac{1}{2}$

## Leather—

Extra Heavy, Short Lap... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @50 $\frac{1}{2}$

Regular Short Lap... 60@80@10 $\frac{1}{2}$

Standard... 60@10@80 $\frac{1}{2}$ @10 $\frac{1}{2}$

Light Standard... 70 $\frac{1}{2}$

## Iron, Steel.

Concord, loose collar... 64 $\frac{1}{2}$ @6 c

Concord, solid collar... 64 $\frac{1}{2}$ @6 $\frac{1}{2}$ c

No. 1 Common... 5 c 14 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$  Com. New Style... 54 $\frac{1}{2}$ @54 $\frac{1}{2}$ c

No. 2, Solid Collar... 54 $\frac{1}{2}$ @54 $\frac{1}{2}$ c

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No. 7, 8, 11 to 14, 10 $\frac{1}{2}$  sets... 60 $\frac{1}{2}$

No. 15 to 18... 50 $\frac{1}{2}$

No. 19 to 22... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Common and Concord, not turned... 15. 50

Common and Concord, turned... 15. 50

Half Patent... 15. 50

## Boxes, Axle—

Common and Concord, not turned... 15. 50

Common and Concord, turned... 15. 50

Half Patent... 15. 50

## Balances—

Caldwell new list... 50 $\frac{1}{2}$

Pullman's... 62 $\frac{1}{2}$ @4

## Spring—

Spring Balances... 50@50 $\frac{1}{2}$ @54

Chattillon's Light Spg. Balances... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$

Chattillon Straight Balances... 40 $\frac{1}{2}$

Chattillon Circular Balances... 50 $\frac{1}{2}$

Chattillon's Large Dial... 30 $\frac{1}{2}$

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb... 5 $\frac{1}{2}$ @3 $\frac{1}{2}$ @4

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No. 15 Extra Heavy Steel Handle,  $\frac{1}{2}$  gro. \$15.00

Rival,  $\frac{1}{2}$  gro. \$10.00

Taplin Mfg. Co.:  $\frac{1}{2}$  gro. \$17.00

No. 50 Small Family size... \$8.50



**B. L. Caps (Sturtevant Shells)**  
 \$1.00 ..... 5¢  
 All other primers ..... \$1.10 to \$1.12

**Carpet Stretchers—**  
 See Stretchers, Carpet.

**Cartridges—**  
 B. B. Caps, Cont. Ball Sngl. .... \$1.90  
 B. B. Caps, Round Ball ..... \$1.12 to \$1.18

**Blank Cartridges:**  
 38 C. F., #5 60 ..... 10¢5¢  
 38 C. F., #7 00 ..... 10¢5¢  
 22 cal. Rim, #1.57 ..... 10¢5¢  
 32 cal. Rim, #2.75 ..... 10¢5¢

**Central Fire—**  
 Pistol and Rifle ..... 15¢5¢  
 Primed Shells and Bullets ..... 15¢5¢  
 Rim Fire Sporting ..... 50¢  
 Rim Fire Military ..... 15¢5¢

**Castors—**  
 Bed ..... 60¢10¢10¢70¢  
 Plate ..... 60¢10¢60¢10¢5¢  
 Philadelphia ..... 70¢10¢70¢10¢5¢  
 Boss ..... 70¢10¢  
 Boss Anti-Friction ..... 70¢10¢  
 Martin's Patent (Phoenix) ..... 45¢  
 Payson's Anti-Friction Furniture ..... 70¢10¢  
 Payson's Anti-Friction Truck ..... 70¢10¢  
 Standard Ball Bearing ..... 45¢  
 Tucker's Patent, low list ..... 30¢

**Cattle Loaders—**  
 See Loaders, Cattle.

**Chain—**  
 American Coil, Full Casks:  
 3-16 1/4 5-16 3/4 7-16 3/4 9-16 3/4  
 7-90 6-90 5-90 4-15 4-90 3-90 4-90  
 1/4 1/4 1 inch.  
 3.70 3.65 3.55 3.55 cents per lb.  
 Less than Cask lots add 10¢ per 100 lbs.  
 German Coil, list July 26, '97 ..... 60¢10¢10¢  
 German Hatter Chain, list July 26, '97 ..... 60¢10¢10¢

**Traces, Western Standard:** 100 pair  
 6-1/2-3, Straight, with ring ..... \$25.00  
 6-1/2-2, Straight, with ring ..... \$27.00  
 6-1/2-1, Straight, with ring ..... \$31.00  
 6-1/2-0, Straight, with ring ..... \$35.00  
 Add 2¢ per pair for Hooks.  
 Twist Traces 2¢ per pair higher than  
 Straight Link.

**Trace, Wagon and Fancy Chains.**  
 list April, '98 ..... 50¢10¢60¢  
**Jack Chain, list July 20, '93:**  
 Iron ..... 60¢10¢10¢  
 Brass ..... 60¢10¢10¢  
 Safety Chain ..... 60¢10¢10¢  
 Gal. Pump Chain ..... 5¢6¢4¢  
 Breast, Hitching and Rein Chains  
 Covert Sg. Works ..... 50¢

**Covert Sg. Works:**  
 Breast ..... 35¢25¢  
 Halter ..... 35¢25¢  
 Heel ..... 35¢25¢  
 Keel ..... 35¢25¢  
 Stallion ..... 35¢25¢  
 Onella Collar and Halter ..... 60¢10¢5¢  
 Europa Collar and Halter ..... 60¢10¢5¢  
 Niagara Collar and Halter ..... 45¢5¢45¢10¢5¢  
 Am. C. and H. Hitters ..... 50¢10¢60¢  
 Am. Cow Ties ..... 35¢30¢40¢5¢

**Wire Goods Co.:**  
 Dog Chain ..... 60¢  
 Universal Dog-Jointed Chain ..... 45¢

**Chalk—(From Jobbers.)**  
 Carpenters', Blue ..... gro. 15¢  
 Carpenters', Red ..... gro. 35¢  
 Carpenters', White ..... gro. 30¢  
 See also Crayons.

**Chalk Lines—See Lines.**

**Checks, Door—**  
 Bardley's ..... 40¢10¢  
 Columbia ..... 50¢10¢  
 Kelpine ..... 60¢10¢10¢

**Chisels—**  
**Socket Framing and Firmer**  
 Standard List ..... 70¢5¢  
 Buck Bros. ..... 30¢  
 Charles Buck ..... 30¢  
 Swan's ..... 70¢5¢  
 L. & J. White ..... 30¢30¢25¢

**Tanged—**  
 Tanged Firmers ..... 40¢5¢40¢10¢  
 Buck Bros. ..... 30¢  
 Charles Buck ..... 30¢  
 L. & J. White, Tanged ..... 25¢5¢

**Cold—**  
 Cold Chisels, good quality lb. 1¢10¢  
 Cold Chisels, fair quality ..... lb. 12¢  
 Cold Chisels, ordinary ..... lb. 8¢9¢

**Chucks—**  
 Bench Pat., each \$8.00 ..... 20¢  
 Skinner Patent Chucks ..... 40¢  
 Combination Lathe Chucks ..... 30¢  
 Drill Chucks, Patent and Standard 30¢  
 Drill Chucks, New Model ..... 2¢  
 Independent Lathe Chucks ..... 40¢  
 Universal Planer Chucks ..... 30¢  
 Universal Lathe Chucks ..... 40¢  
 Face Plate Jaws ..... 35¢  
 Standard Tool Co. .... 45¢  
 Improved Drill Chuck ..... 45¢  
 Union Mfg. Co.:  
 Combination ..... 40¢  
 Gear Drill ..... 30¢  
 Geared Scroll ..... 40¢  
 Independent ..... 40¢  
 Union Drill ..... 30¢  
 Universal ..... 40¢  
 Face Plate Jaws ..... 35¢

**Clamps—**  
 Adjustable, Hammers ..... 20¢20¢5¢  
 Adjustable, Stearns ..... 30¢  
 Cabinet, Sargent's ..... 45¢10¢  
 Carriage Makers', P. S. & W. Co. 40¢10¢  
 Carriage Makers', Sargent's ..... 50¢10¢  
 Beav. Parallel, All Tool ..... 75¢10¢  
 Leman's, Ulica Drop Forc. & Tool  
 Co. ..... 40¢  
 Saw Clamps, see Vises, Saw Filers.

**Cleaners Walk—**  
 Star Socket, All Steel ..... \$ doz. \$4.00 net  
 Star Shank, All Steel ..... \$ doz. \$3.75 net  
 W. & C. S. Varies, All Tool ..... 75¢10¢  
 \$3.25; 8 in. \$3.40; 8 1/2 in. \$3.50.

**Cleavers, Butchers—**  
 Foster Bros. ..... 30¢  
 New Haven Edge Tool Co.'s ..... 40¢40¢5¢

**Nichols Bros., Flat hdl., 304; Rd. hdl., 305**  
 Fayette H. Plumb ..... 25¢  
 F. & W. ..... 30¢40¢50¢10¢  
 L. J. White ..... 25¢

**Clippers—**  
 Chicago Flexible Shaft Company  
 Handy Toller ..... \$ doz. \$7.90  
 Mascotte Toller ..... \$ doz. \$8.40  
 Monitor Toller ..... \$ doz. \$9.00  
 Stewart's Patent ..... \$ doz. \$10.00

**Clips, Axle—**  
 Eagle and Superior 1/4 and 5-16  
 inch ..... 65¢10¢70¢  
 Norway, 1/4 and 5-16 inch ..... 65¢10¢5¢

**Cloth and Netting, Wire**  
 —See Wire, &c.

**Cocks, Brass—**  
 Hardware list (Globe, Kerosene,  
 Lever Bibbs, Backing, &c.) ..... 70¢5¢70¢10¢

**Coffee Mills—See Mills, Coffee.**

**Collars Dog—**  
 Brass, Pope & Stevens' list ..... 40¢  
 Embossed, Gilt, Pope & Stevens' list 30¢10¢  
 Leather, Pope & Stevens' list ..... 40¢

**Compasses, Dividers, &c.**  
 Ordinary Goods ..... 70¢10¢75¢  
 Bemis & Call Hdw. & Tool Co.:  
 Dividers ..... 65¢  
 Callipers, Call's Patent Inside ..... 65¢  
 Callipers, Double ..... 25¢30¢  
 Callipers, Inside or Outside ..... 65¢  
 Callipers, Wing ..... 60¢  
 Compasses ..... 50¢  
 J. Stevens & A. T. Co. ..... 25¢10¢

**Conductor Pipe, Galva-**  
**nized—**  
 Territory ..... Carload ..... L. C. L.  
 Eastern ..... 60¢20¢25¢  
 Central ..... 60¢20¢25¢  
 Southern ..... 60¢20¢25¢  
 S. Western ..... 60¢20¢25¢  
 Terms 25¢ for cash.  
 See also Eave Trough.

**Coolers, Water—**  
 Nos. 2 3 4 6  
 Laborator \$11.50 \$14.00 \$17.50 \$20.00  
 8 ga.  
 \$24.00  
 Not 3 4 6 8  
 Iceland L. \$23.00 \$25.00 \$30.00 \$37.50  
 10 14 gal.  
 \$57.00 \$71.00

**Coopers' Tools—**  
 See Tools, Coopers'.

**Cord—Sash—**  
 Braided, Drab ..... lb. 22¢25¢  
 Braided, White, Common ..... lb. 16¢18¢  
 Cable Laid Italian, lb. A, 18¢; B, 18¢  
 Common India ..... lb. 8¢5¢1/2¢  
 Cotton Sash Cord, Twisted ..... lb. 12¢10¢  
 Patent Russia ..... lb. 12¢10¢  
 Cable Laid Russia ..... lb. 13¢11¢  
 India Hemp, Braided ..... lb. 14¢12¢  
 India Hemp ..... lb. 10¢12¢  
 Patent India ..... lb. 10¢12¢  
 Pearl Braided, cotton ..... lb. 10¢12¢  
 Massachusetts, White ..... lb. 32¢  
 Massachusetts, D. ab. ..... lb. 26¢  
 Eddystone Braided Cotton ..... lb. 12¢  
 Har mony Cable Laid Italian ..... lb. 18¢  
 Ossawaun Mills:  
 Crown, Solid Braided White ..... lb. 18¢  
 Braided, Giant, White ..... lb. 17¢

**Cable Laid Italian ..... 10¢**  
**Cable Laid Russian ..... 14¢**  
**Cable Laid India ..... 12¢**  
**Braided India ..... 18¢**  
**Phonix, White ..... 12¢**  
**Samson, 1 ..... 12¢**  
**Braided, Drab Cotton ..... lb. 32¢4¢**  
**Braided, Italian Hemp ..... lb. 32¢4¢**  
**Braided, Linen ..... lb. 49¢**  
**Braided, White Cotton, Spot ..... lb. 28¢4¢**

**Silver Lake:**  
 A quality, Drab, 40¢ ..... 15¢  
 B quality, White, 35¢ ..... 15¢  
 B quality, Drab, 35¢ ..... 15¢  
 B quality, White, 30¢ ..... 15¢  
 Italian Hemp, 40¢ ..... 15¢  
 Linen, 57¢4¢ ..... 15¢

**Wire, Picture—**  
 Braided or Twisted ..... 80¢10¢30¢1¢  
 10¢

**Corn Knives and Cutters**  
 —See Knives, Corn.

**Corn Planters—**  
 See Planters, Corn.

**Crackers, Nut—**  
 Little Giant ..... \$ gr. \$24.00  
 Turner & Seymour Mfg. Co. ..... 50¢

**Cradles—**  
 Grain ..... 50¢

**Crayons—**  
 White round Crayons gross ..... 5¢6¢  
 Cases, 100 gro., \$4.50 \$5.00, at fac-  
 tory.

**D. M. Steward Mfg. Co.**  
 Metal Workers' Crayons, gr. \$2.50  
 Soapstone Pencils, round, flat  
 or square ..... gr. \$1.50  
 Rolling Mill Crayons ..... gr. \$2.50  
 Railroad Crayons (compo-  
 sition) gr. \$2.00

**See also Chalk.**

**Creamery Pails—See Pails.**

**Crooks, Shepherds—**  
 Fort Madison, Heavy ..... \$ doz. \$7.00  
 Fort Madison, Light ..... \$ doz. \$6.50

**Crow Bars—See Bars, Crow.**

**Cultivators—**  
 Victor Garden ..... \$ doz. \$10.00

**Cutters—**  
 Glass—  
 Smith & Hemlinway Co. ..... 30¢

**Meat—**  
 American ..... 30¢  
 Nos. 1 2 3 4 5  
 Each ..... \$5 \$7 \$10 \$25 \$50 \$60  
 Connecticut:  
 No. 1 0 1 8 10 12  
 Each ..... \$1.75 2.25 3.00 3.00 3.50  
 Enterprise ..... 25¢25¢75¢  
 Nos. 5 10 12 22 32  
 Each ..... \$2 \$3 \$2.50 \$4 \$6  
 Dixons ..... 83¢10¢  
 Nos. 1 2 3 4  
 \$14.00 \$17.00 \$19.00 \$30.00

**Hale's, \$ doz ..... 85¢**  
**Nos. 11 12 13**  
**\$27.00 \$33.00 \$45.00**  
**Home No. 1, \$ doz. \$26.00 ..... 50¢10¢**  
**Little Giant, \$ doz. \$30.00 \$33.00 \$35.00**  
**Nos. 305 310 312 340 392**  
**\$35.00 \$45.00 \$44.00 \$71.00 \$68.00**  
**Sterling ..... 33¢5¢**  
**Nos. 1 2**  
**Each ..... \$2.00 \$2.50**  
**Miles' Challenge, \$ doz. \$45.00 \$45.00**  
**Nos. 1 2 3**  
**\$22.00 \$30.00 \$40.00**  
**New Triumph No. 605, \$ doz. \$24.00 ..... 33¢45¢**  
**Woodruff's, \$ doz. \$15.00 150**  
**Nos. 100 150**  
**Chadborn's Smoked Beef Cutter, \$ doz. \$15.00 \$18.00**  
**Enterprise Beef Shavers ..... 25¢30¢**

**Slaw and Kraut—**  
 Henry Dismor & Son:  
 Kraut Cutters 24 x 7 3/8 x 28 30 x 9 553  
 Krut Cutters 36 x 12 40 x 12 ..... 40¢  
 Tucker & Dorsey Mfg. Co.:  
 Kraut Cutters ..... 40¢  
 Slaw Cutters, 1 Knife, \$ gr. \$18.00 \$20.00  
 Slaw Cutters, 2 Knife, \$ gr. \$22.00 \$36.00

**Tobacco—**  
 All Iron, Cheap ..... doz. \$1.25 to \$1.50  
 Enterprise ..... \$ doz. \$2.00 \$2.50  
 National, \$ doz. \$21.00 ..... 40¢  
 Sargent's, \$ doz. \$24.00 ..... 60¢10¢10¢

**Washer—**  
 Appleton's, \$ doz. \$16.00 ..... 60¢10¢60¢10¢10¢  
 Bonney's ..... \$ doz. \$4.75

**Diggers, Post Hole, &c.—**  
 Dalbey Post Hole Auger, per doz. \$10.00  
 Iwan's Improved Post Hole Auger ..... 40¢  
 Iwan's Perfection Post Hole Digger ..... \$ doz. \$4.00

**Kohler's Universal ..... \$ doz. \$14.00**  
**Kohler's Little Giant ..... \$ doz. \$15.00**  
**Kohler's Hercules ..... \$ doz. \$12.00**  
**Kohler's Invinible ..... \$ doz. \$10.00**  
**Kohler's Rival ..... \$ doz. \$8.00**  
**Kohler's Pioneer ..... \$ doz. \$8.00**  
**Never-Break Post Hole Diggers, \$ doz. \$24.00 ..... 60¢**  
**Samson, \$ doz. \$34.00 ..... 25¢**

**Dividers—See Compasses.**

**Dog Collars—See Collars, Dog.**

**Door Checks—**  
 See Checks, Door.

**Door Springs—**  
 See Springs, Door.

**Drawers, Money—**  
 Tucker's, Pat. Alarm Tdl No. 1, \$ doz. \$18; No. 2, \$15; No. 3, \$14; No. 4, \$18.

**Drawing Knives—**  
 See Knives, Drawing.

**Drills and Drill Stocks—**  
 Common Blacksmiths' Drill, each \$1.75 to \$2.00  
 Blacksmiths' Self-feeding, each \$3.75 to \$4.00

**Bench Drills, Stearns' ..... \$3.00 15¢10¢**  
**Breast, Millers Falls, each \$3.00 15¢10¢**  
**Breast, P. S. & W. 30¢30¢10¢**  
**Goodell Automatic Drills, 40¢5¢40¢10¢**  
**Ratchet, Curtis & Curtis ..... 25¢**  
**Ratchet, Parker's ..... 40¢**  
**Ratchet, Weston's, P. S. & W. 40¢10¢**  
**Ratchet, Whitney's ..... 40¢10¢**  
**Whitney's Hand Drill, No. 1, \$10.00;**  
**Adjustable, No. 10, \$12.00 ..... 35¢4¢**

**Twist Drills—**  
 Standard List ..... 67¢60¢10¢

**Drill Bits or Bit Stock**  
**Drills—See Augers and Bits.**

**Drill Chucks—See Chucks.**

**Dripping Pans—**  
 See Pans, Dripping.

**Drivers, Screw—**  
 Bailey's Screw Holder and Driver, \$ doz. 24-inch, \$6; 4-in., \$7.30 6-in., \$9.00  
 Buck Bros. ..... 30¢  
 Buck Bros' Screw Driver Eits ..... 27¢4¢  
 Champion ..... 40¢10¢  
 Douglas Mfg. Co. ..... 20¢20¢10¢  
 Fray's Hol. H'die Sets, No. 3, \$12.00 50¢  
 Gay & Parsons' Ratchet ..... 35¢  
 Goodell's Automatic ..... 50¢10¢10¢50¢10¢10¢5¢

**Mayhew's Black Handle ..... 50¢**  
**Mayhew's Monarch ..... 45¢10¢**  
**New England Specialty Co. 50¢10¢**  
**Sargent & Co.'s ..... 50¢10¢50¢10¢50¢10¢50¢10¢**  
**Screw Driver Bits ..... \$ doz. 50¢70¢**  
**Stanley's R. & L. Co.'s:**  
**No. 64, Varinshed Handles ..... 60¢10¢**  
**No. 86 ..... 70¢10¢**  
**Swan's:**  
**Nos. 65 to 68 ..... 50¢**  
**No. 40 ..... 40¢10¢**  
**Nos. 25, 35 and 45 ..... 20¢10¢10¢**

**Eave Trough, Galvanized**  
 Territory ..... Carload ..... L. C. L.  
 Eastern ..... 75¢15¢ 75¢10¢5¢  
 Central ..... 75¢12¢5¢ 75¢7¢5¢  
 Southern ..... 75¢10¢ 75¢5¢  
 S. Western ..... 75¢2¢5¢ 75¢  
 Terms 25¢ for cash.  
 See also Conductor Pipe.

**Egg Beaters—See Beaters, Egg.**

**Egg Openers—**  
 See Openers, Egg.

**Emery, Turkish—**  
 4 to 16 5 1/2 to 150 Flour  
 Kegs ..... lb. 4 1/4 c 5 c 3 c  
 1/4 Kegs ..... lb. 4 1/4 c 5 1/4 c 3 1/4 c  
 1/4 Kegs ..... lb. 5 c 6 1/4 c 3 1/4 c  
 10-lb. cans, 10 1/2 c 6 1/4 c 5 1/4 c  
 10-lb. cans, less than 10 ..... 10 c 10 c 8 c

**Enameled and Tinned Ware—See Ware, Hollow.**

**Escutcheon Pins—**  
 See Pins, Escutcheon.

**Extractors, Lemon Juice—**  
 See Squeezers, Lemon.

**Fasteners, Blind—**  
 Zimmerman's ..... 50¢10¢

**Faucets—**  
 Cork Lined ..... 70¢5¢70¢1¢5¢  
 Metallic Key, Leather Lined ..... 70¢70¢10¢5¢  
 Red Cork ..... 70¢70¢10¢5¢  
 B. & L. B. Co.:  
 West's Lock, Open and Shut Key 50¢10¢  
 John Sommer's Peerless Tin Key ..... 40¢  
 John Sommer's Boss Tin Key ..... 40¢  
 John Sommer's Victor Metal Key ..... 50¢10¢  
 John Sommer's Duplex Metal Key ..... 40¢  
 John Sommer's Diamond Lock ..... 40¢  
 John Sommer's I. X. L. Cork Lined ..... 50¢  
 John Sommer's Reliable Cork Lined ..... 50¢10¢

**John Sommer's Common Cork Lined, 70¢**  
**John Sommer's Chicago Cork Lined, 90¢**  
**John Sommer's O. K. Cork Lined ..... 50¢**  
**John Sommer's Perfection Cedar ..... 40¢**  
**Star, Metal Plug new list ..... 60¢60¢5¢**  
**Lockport, Metal Plug, reduced list, 60¢5¢**

**Self Measuring:**  
 Enterprise, \$ doz. \$36.00 ..... 40¢  
 Lane's, \$ doz. \$36.00 ..... 35¢  
 National Measuring, \$ doz. \$36.00 ..... 40¢

**Felloe Plates—**  
 See Plates, Felloe.

**Files—Domestic—**  
 List revised Nov. 1, 1899.

**Best Brands ..... 70¢75¢4¢**  
**Good Brands ..... 75¢10¢75¢10¢10¢**  
**Fair Brands ..... 80¢80¢10¢**  
**Second Quality ..... 80¢10¢80¢25¢**

**Imported—**  
 Stub's Tapers, Stub's list, July 26, '97 ..... 50¢10¢10¢

**Fixtures, Grindstone—**  
 Net Prices:  
 Inch ..... 15 17 19 21 25  
 Per doz. \$2.90 3.10 3.30 3.50 4.20  
 Stowell's Giant Grindstone Hanger ..... \$ doz. \$6.00

**Stowell's Grindstone Fixtures, 50¢**  
**P. S. & W. Co. 50¢10¢75¢10¢10¢**  
**Reading Hardware Co. 30¢20¢10¢**  
**Sargent's Patent ..... 60¢10¢60¢10¢10¢**

**Fluting Machines—**  
 See Machines, Fluting.

**Fodder Squeezers—**  
 See Squeezers, Fodder.

**Forks—**  
 Aug. 1, 1899, list.  
 Hay, 2 tine ..... 65¢  
 Hay, 3 tine ..... 65¢  
 Manure, 4 tine ..... 70¢  
 Manure, 5 and 6 tine ..... 70¢  
 Spading ..... 70¢5¢

**Iowa Dig-Easy Potatoes ..... 65¢**  
**Victor, Hay ..... 65¢**  
**Victor, Manure ..... 70¢**  
**Victor, Header ..... 60¢**  
**Champion, Hay ..... 60¢**  
**Champion, Manure ..... 70¢**  
**Columbia, Hay ..... 65¢**  
**Columbia, Manure ..... 70¢**  
**Columbia, Spading ..... 70¢**  
**Hawkeye Wood Barley 4 tine \$ doz. \$5.00; 6 tine, \$6.00.**

**W. & C. P. & D. G. & Co. 45¢**  
**Acting Hay ..... 60¢20¢70¢**  
**Ame Manure ..... 60¢25¢**  
**Jacks in S-e-l Barley ..... 70¢10¢24¢**  
**Dakota H-e-a-d ..... 70¢10¢24¢**  
**Kansas H-e-a-d ..... 65¢24¢**  
**W. & C. P. vari - Wood Barley 4 tine, \$ doz. \$5.00; 5 tine, \$6.00**  
**Plated, -See Spoons.**

**Frames—Saw—**  
 Red, Polished and Varinshed, \$ doz. \$1.15 \$1.30  
 White ..... \$ doz. 75¢90¢

**Screens and Frames—**  
 See Screens.

**Freezers, Ice Cream—**  
 Qts. 2 3 4 6 8 10  
 Best \$1.00 1.60 1.85 2.30 3.00 3.50  
 Good \$1.25 1.85 1.70 2.05 2.65 3.20  
 Fair \$1.00 1.10 1.30 1.75 2.50 3.00

**Fruit and Jelly Presses—**  
 See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.**

**Fuse—**  
 Per 1000 Feet.  
 Hemp Fuse ..... \$2.00  
 Cotton Fuse ..... 2.50  
 Single Taped Fuse ..... 3.50  
 Double Taped Fuse ..... 4.70  
 Triple Taped Fuse ..... 5.70

**Gates, Molasses and Oil—**  
 Stebbin's ..... 80¢80¢

**Gauges—**  
 Marking, Mortise, &c. 55¢10¢55¢20¢  
 Barrett's Comb. Roller Gauge ..... \$ doz. \$2.75 \$3.00

**Stanley R. & L. Co.'s Butt & Bolt Gauge ..... 30¢**  
**Wire, Brown & Sharpe's ..... 10¢10¢**  
**Wire, Morse's ..... 10¢10¢**  
**Wire, P. S. & W. Co. 10¢10¢**

**Clampets—**  
Nail Metal, Assorted, gro. \$1.40@1.75  
Spike Metal, Assorted, gro. \$3.00@3.50  
Nail, Wood Handled, Assorted,  
gro. \$4.00@4.25  
Spike, Wood Handled, Assorted,  
gro. \$5.00@5.25

**Class, American Window**  
List Jan 1, 1898.

Small lots from store:  
Single, Eastern.....85¢  
First Bracket.....85¢  
Second and Third Brackets.....85¢  
Eastern, All Other Brackets.....85¢  
Double, Eastern.....85¢  
First Bracket.....85¢  
Second, Third, Fourth and Fifth  
Brackets.....85¢  
All Other Brackets.....85¢  
From Jobbers or Factory, with Freight  
Allowance, except in Eastern dis-  
trict:  
Carloads, Single Strength.....85¢  
First Bracket.....85¢  
Second and Third Brackets.....85¢  
All Above.....90¢  
Carloads Double Strength  
First Five Brackets.....85¢  
60 inch Bracket.....90¢  
70 to 100 inch Bracket, inclusive  
90¢  
All Above.....90¢

**Glue—Liquid, Fish—**  
List A, Bottles or Cans, with Brush.....87¢  
List B, Cans (1/2 pts., pts., qts.).....83¢  
List C, Cans (1/2 gal., gal.).....85¢

**Glue Pots—See Pots, Glue.**

**Grease, Axle—**  
Common Grade.....gro. \$5.00@5.50  
Dixon's Everlasting.....10-lb pails, ea. \$8.00  
Dixon's Everlasting, in bxs., 5 doz. 1 lb  
\$1.20; 2 lb \$2.00

**Grindstone Fixtures—**  
See Fixtures, Grindstone.

**Gun Powder—See Powder.**

**Hack Saws—See Saws.**

**Hafts, Awl—**  
gro.  
Pat Patent, Leather Top.....\$4.90@5.25  
Pat Patent, Plain Top.....\$3.50@3.75  
Sewing, Brass Ferrule.....\$1.50@1.60  
Saddlers', Brass Ferrule.....\$1.35@1.45  
Poa, Common.....\$1.25@1.35  
Brad, Common.....\$1.50@1.75

**Halters and Ties—**  
Covert Mfg. Co., Web.....45¢  
Covert Mfg. Co., Jute Rope.....45¢  
Covert Mfg. Co., Sisal Rope.....30¢  
Covert's Saddlery Works, 90 list, W-B.....60¢  
Covert's Saddlery Works, Leather.....60¢  
Covert's Saddlery Works, Sisal.....60¢  
Covert's Saddlery Works, Manila.....60¢  
Covert's Saddlery Works, Cotton.....70¢

**Hammers—**  
Handled Hammers—  
Heller's Machinists'.....50¢  
Heller's Farmers'.....50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Hammers—**  
Handled Hammers—  
Heller's Machinists'.....50¢  
Heller's Farmers'.....50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Hammers—**  
Handled Hammers—  
Heller's Machinists'.....50¢  
Heller's Farmers'.....50¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 21



**Latches, Thumb—**

Roggin's Latches.....doz. 32@35

**Lawn Mowers—**

See Mowers, Lawn.

**Leaders, Cattle—**Small.....doz. 45c; large, 55c  
Covert Mfg. Co.....45@55**Lemon Squeezers—**

See Squeezers, Lemon.

**Lifters, Transom—**

Dickson:  
3 x 4 ft. x 1/2".....\$100 \$11.00  
Other sizes, iron.....70@100  
Other sizes, brass and bronze.....70@  
Excelsior.....60@60 1/2  
Payson's:  
Solid Grip Nos. 618 and 644, \$ 1.00  
Bronzed Iron.....70@

**Lines—**

Wire Clothes, Nos. 18 19 20  
100 feet.....\$2.90 \$2.50 1.85  
75 feet.....\$2.15 1.90 1.65

**Ossawa Mills,**

Crown Solid Braided Chalk.....83 1/2  
Mason's, No. 0 to No. 5.....83 1/2  
Barnum Cordage Works:  
Solid Braided Chalk, No. 0 to 5.....10  
Silver Lake Braided Chalk, No. 0, \$6.00;  
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50  
\$ gr.....30@

**Locks, &c.— Cabinet—**

Cabinet Locks.....33 1/2@33 1/2@7 1/2

**Door Locks, Latches, &c.—**

[Net prices are very often made on these goods.]

Reading Hardware Co.....40@  
R. & E. Mfg. Co.....50@  
Sargent & Co.....40@40 1/2  
Slaymaker-Barry Co.....30@35  
Snow's Victor.....50@105

**Elevator—**

Stowell's.....83 1/2

**Padlocks—**

Wrought Iron, list Dec. 3, '97.....70@70 1/2

Dog Collar, S. B. Co.....40@

R. &amp; E. Mfg. Co. Wrt. Steel &amp; Brass.....50@

S. B. &amp; Co.....40@

**Sash, &c.—**

Fitch's Brasses and Brass.....60 1/2  
Fitch's Iron.....70@  
Ives' Patent.....60 1/2@60 1/2  
Oedinger's Automatic.....50@  
Payson's Perfect.....70@  
Payson's Signal (new list).....75@  
Reading.....60@10@10 1/2

**Machines—****Boring—**

Without Augers.

Upright. Angular.

Improved No. 3.....\$1.25 No. 1 \$5.00

Improved No. 4.....8.75 No. 2 3.38

Improved No. 5.....2.75

Jennings.....2.50 3.00

Miller's Falls.....5.75

Snell's, Rice's Pat. 2.50 2.75

Swan's, No. 500.....5.10 No. 200 6.45

**Holisting—**

Moore's Anti-Friction Differential Pulley Block.....30@

Moore's Hand Hoist, with Lock Brake.....30@

**Washing—**

Wayne American, \$ doz. \$28.00

Western Star, No. 2, \$ doz. 28.00

Western Star, No. 3, \$ doz. 30.00

St. Louis, No. 41, \$ doz. 60.00

**Mallets—**

Hickory.....45@50@55

Lignumvite.....45@50@55

Tinner's, Hickory and Applewood, doz.....60@55c

Fiber Head Stearns.....30@105

**Mats— Door—**

Elastic Steel (W. G. Co.).....105

**Mattocks—**

See Picks and Mattocks.

**Meat Cutters—**

See Cutters, Meat.

**Milk Cans—See Cans, Milk.****Mills— Coffee—**

Box and Side, list Jan. 1, '88.....50@10@60@55

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co.....25@30@

National, list Jan. 1, '94.....30@

Parker's Columbia and Victoria.....50@10@35

Parker's Box and Side.....50@10@60@

Swift, Lane Bros.....30@

**Mining Knives—**

See Knives, Mining.

**Molasses Cates—**

See Gates, Molasses.

**Money Drawers—**

See Drawers, Money.

**Mowers, Lawn—**

Net prices are generally quoted.

Cheap.....all sizes, \$2.00

Good.....all sizes, \$2.50@2.75

10 12 14 16-inch

High Grade 4.25 4.50 4.75 5.00

Pennsylvania and Continental 60@10@55

Quaker City.....70@55

Great American.....70@55

**Philadelphia:**

Styles M., S., C., K., T.....70@105  
Style A, all Steel.....60@105  
Style E, Low Wheel.....60@105  
Style E, High Wheel.....70@105  
Drexel and Gold Coin, low list.....50@

**Nails—**

Cut and Wire. See Trade Report.

Wire Nail; and Brads, Papered.

List July 20, 1899.....85@85 1/2

Hungarian, Finishing, Upholster-

ers', &amp;c. See Tacks.

**Horse—**

Nos. 6 7 8 9 10

A. C.....25@28@29@31@31 1/2

Capewell.....19@18@17@16@15@14 1/2

B. K.....25@25 1/2@22@21@20@19 1/2

Chaplain.....28@26@25@24@23@22 1/2

Maud S.....25@23@22@21@20@19 1/2

Neponset.....23@21@20@19@18@17 1/2

Putnam.....23@21@20@19@18@17 1/2

Standard.....23@21@20@19@18@17 1/2

Star.....23@21@20@19@18@17 1/2

Vulcan.....23@21@20@19@18@17 1/2

Picture

1 1/2 2 2 1/2 3 3 1/2 in.

Brass Head.....45@60@70@95@1.00 gro.

Por. Head.....1.10 1.10 1.10 ..gro.

**Nippers, See Pliers and Nippers.****Nut Crackers—**

See Crackers, Nut.

**Nuts—**

List Feb. 1, '99.

Cold Punched

Mfrs. or U. S. Standard. list.

Hexagon, plain.....40@40 1/2

Square, plain.....40@40 1/2

Square, C. T. &amp; R.....40@40 1/2

Hexagon, C. T. &amp; R.....40@40 1/2

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stand.

Square.....5.30@5.30c

Hexagon.....5.50@5.50c

Norm.—Tapped Nuts are now 2-10c.

higher than above.

**Oakum—**

Best or Government.....lb. 6 1/2c

Navy.....lb. 6 c

U. S. Navy.....lb. 5 1/2c

Plumbers' Spun Navy.....5 c

In carload lots 1/4 lb. off f.o.b. New York.

**Oil, Axle—**

Snow Flake:

1 pt. cans, per doz.....\$9.00

1 qt. cans, per doz.....\$4.80

1 gal. cans, per doz.....\$15.00

5 gal. cans, per doz.....\$68.00

Oil Tanks—See Tanks, Oil.

**Oilers—**

Brass and Copper.....40@10@50@

Tin or Steel.....60@10@65@

Zinc.....60@10@65@

Malleable, Hammers' Improved, No. 1.

\$3.00; No. 2 \$4; No. 3, \$4.40 \$ doz. 20@

Malleable, Hammers' Old Pattern,

same list.....50@105

Willmot &amp; Hobbs Mfg. Co.....70@70 1/2

**Openers—****Can—**

French.....doz. 35c

Iron Handle.....doz. 25@27c

Sprague, Iron Hdl., per doz 35@40c

Sardine Scissors.....doz. \$1.75@1.90

Tip Top.....per doz. \$0.75

National, \$ gro.....\$1.75@2.00

Stowell's.....per doz. \$2.40@2.50

Nickel Plate.....per doz. \$2.00

Silver Plate.....per doz. \$4.00

**Packing—****Rubber—**

Standard, fair quality.....70@10@75@

Inferior quality.....75@10@80@

Extra.....60@5@60@10@5

Jenkins' Standard, \$ 80c.....25@25 1/2

**Miscellaneous—**

American Packing.....9@10c lb.

Cotton Packing.....13@14c lb.

Italian Packing.....10@11c lb.

Jute.....6@5 1/2c lb.

Russia Packing.....12@15c lb.

**Pails—****Creamery—**

S. S. &amp; Co., with gauges, No. 1 \$6.50;

No. 2, \$6.75 \$ doz.

**Galvanized—**

Price per gro.

Inch.....10 12 14

Water, Regular.....18.00 \$1.00 \$4.00

Water, Heavy.....22.00 25.00 28.00

Fire, Rd. Bottom.....51.00 53.00 55.00

Well.....\$7.00 \$9.00 \$10.00

**Pans—****Dripping—**

Standard List.....60@80@55

**Fry—**

Standard List.....75@10@50@

**Roasting and Baking—**

Regal, S. S. &amp; Co., \$ doz. Nos. 5, \$4.50;

10 \$5.00; 20 \$5.50; 30, \$6.00

Simplex, \$ gro., No. 40, \$30.00; 50,

\$34.50; 60 \$39.00; 140, \$39.00; 150,

\$37.50; 160, \$43.00.

**Paper—****Building Paper—**

Per roll

Rosin Sized Sheathing: 500 sq. ft.

Light wt., 20 sq. ft. to lb. \$0.40@0.45

Medium wt., 12 sq. ft. to lb. \$0.60@0.65

Heavy wt., extra quality \$0.95@1.05

Medium Grades Water Proof

Sheathing \$0.80@1.25

Deafening Felt, 9, 6 and 4 1/2 sq. ft.

to lb., ton.....\$45.00@55.00

York Haven Waterproof Sheathing.....\$1.35@1.75

**Tarred Paper.**

1 ply (roll 300 sq. ft.), ton.....\$32.00@37.00

2 ply, roll 100 sq. ft.....75c

3 ply, roll 100 sq. ft.....\$1.00

**Sand and Emery—**

List Dec. 23, 1899.....50@10@50@10@55

**Parers—****Apple—**

Advance.....\$ doz. \$4.50

Baldwin.....\$ doz. \$5.00

Bonanza.....each \$5.00

Dandy.....each \$7.50

Eureka, 1898.....each \$16.00

Family Bay State.....\$ doz. \$4.00

Hudson's 1 1/2 lb. Star.....\$ doz. \$4.50

Hudson's Rocking Table.....\$ doz. \$5.50

Improved Bay State \$ doz. \$27.00@30.00

New Lightning.....\$ doz. \$5.50

Reading 72.....\$ doz. \$4.00

Reading 78.....\$ doz. \$7.00

Turn Table '98.....\$ doz. \$5.50

White Mountain.....\$ doz. \$4.00

**Potato—**

Saratoga.....\$ doz. \$5.50

White Mountain.....\$ doz. \$4.50

**Paris Green—**

Arsenic, kegs or casks.....lb. 12 1/2@13 c

Kegs, 100 to 175 lb.....lb. 15 @13 1/2c

Kits, 14, 28, 56 lb.....lb. 14 @14 1/2c

Paper boxes, 2 to 5 lb.....lb. 14 @14 1/2c

Paper boxes, 1 lb.....lb. 14 1/2@15 c

Paper boxes, 1/2 lb.....lb. 15 1/2@16 c

Paper boxes, 3/4 lb.....lb. 16 1/2@17 c

**Picks and Mattocks—**

List Feb. 23, 1899.....65@65 1/2

**Pinking Irons—**

See Irons, Pinking.

**Pins—****Escutcheon—**

Brass.....60@105

Iron, list Nov. 11, '85.....60@105

**Pipe, Cast Iron Soil—**

Factory Shipments.

Standard, 2-6 in.....65@105

Extra Heavy, 2-6 in.....70@

Fittings.....75@

**Pipe, Merchant, Boiler****Tubes, &c.—**

Carloads to Consumers.

**Merchant Pipe.**

Black. Galva-

nized.

1/4 to 3/4 inch.....65% 50%

3/4 to 8 inch.....85% 55%

9 to 12 inch.....65% 50%

**Boiler Tubes.**

Up to 22 feet and over.

Steel. 22 feet.

1 to 1 1/2 inch.....50% 45%

1 1/2 to 2 1/4 inch.....65% 45%

2 1/4 inch.....50% 45%

2 1/4 to 13 inch.....55% 50%

Iron.

1 to 1 1/2 inch.....45% 40%

1 1/2 to 2 1/4 inch.....40% 34%

2 1/4 inch.....45% 40%

2 1/4 to 13 inch.....55 1/2% 47 1/2%

**Casing. S. & S.**

2 to 2 1/2 inch.....45%

2 1/2 to 4 1/2 inch, and 7 1/2 to 12 1/2 inch.....55%

4 1/2 to 7 1/2 inch.....

# Pulleys—

Hay Fork, Swivel or Solid Eye..... doz. \$1.50@1.75  
 Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, per doz. \$12.00..... 40¢  
 Hay House, Awaiting, &c..... 60¢@80¢10¢  
 Japanned Clothes Line..... 70¢10¢10¢  
 Japanned Screw..... 70¢10¢10¢  
 Japanned Slide..... 70¢10¢10¢  
 Stowell's Ceiling or End, Anti-Friction 60¢  
 Stowell's Dumb Walter, Anti-Friction..... 60¢10¢  
 Stowell's Electric Light..... 60¢  
 Stowell's Slide, Anti-Friction..... 60¢10¢

## Sash Pulleys—

Common Sense, 1 1/2 in. doz. 20¢;  
 2 in., 22¢.  
 Empire..... 1 1/2 in., 17¢; 2 in., 19¢  
 Grand Rapids All Steel Noiseless..... 40¢  
 Ideal No. 13..... 1 1/2 in., 20¢; 2 in., 22¢  
 Improved..... 1 1/2 in., 17¢; 2 in., 19¢  
 Niagara..... 1 1/2 in., 16¢; 2 in., 19¢  
 No. 36, Troy..... 1 1/2 in., 16¢; 2 in., 19¢  
 Star..... 1 1/2 in., 16¢; 2 in., 19¢  
 Ace..... 1 1/2 in., 16¢; 2 in., 19¢  
 For All-Steel, Nos. 3 and 7, 2 1/2 in. doz. 35¢  
 No. 9, 1 1/2 in. doz. 30¢  
 Extra for Plate Finish..... doz. 20¢  
 Extra for Anti-Friction Bronze Rushing..... doz. 10¢  
 Tackle Blocks—See Blocks.

## Pumps—

Cistern..... 60¢@80¢10¢  
 Pitcher Spout..... 70¢10¢75¢  
 Pump Leathers, all sizes..... gro. \$6.00  
 Barnes Dhl. Actine (low list)..... 50¢  
 Flint & Walling's Fast Mail..... 55¢55¢10¢  
 Flint & Walling's 1 1/2 in. Spout..... 75¢  
 Loud's Suction Pumps, U. H. Co..... 50¢  
 Meyer's Pumps, low list..... 50¢  
 Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co..... 30¢  
**Punches—**  
 Revolving (4 tubes)..... doz. \$1.00@1.50  
 Saddlers' or Drive, good..... doz. \$2.00@2.25  
 Spring, good quality..... \$2.00@2.25  
 Bemis & Call Co.'s Cast Steel Drive..... 50¢  
 Bemis & Call Co.'s Check..... 55¢  
 Bemis & Call Co.'s Spring..... 50¢  
 Niagara Hollow Punches..... 45¢  
 Niagara Solid Punches..... 55¢  
 Spring, Leach's Pat..... 15¢  
 Steel Screw, B. & K. Mfg. Co..... 40¢  
 Tinnars' Hollow, P., S. & W. Co..... 35¢@35¢5¢  
 Tinnars' Solid, P., S. & W. Co..... 55¢  
 \$1.44..... 55¢

## Rail—

**Barn Door, &c.—**  
 Barn Door, Light..... in. 1/4 9¢ 1/2 9¢  
 100 feet..... \$3.00 \$2.50 \$3.00  
 B. D. for N. E. Hangers:  
 Small. Med. Large.  
 100 feet..... \$2.20 2.70 3.20  
 Sliding Door, Bronze Wrt Iron, ft. 6 1/2¢  
 Sliding Door, Iron Painted..... 7¢@3¢  
 Sliding Door, Wrought Brass, 1 1/2 in. doz. 36¢. 50¢  
 Cronk's Double Braced Steel Rail, 100 ft. 3¢4¢  
 Cronk's O. N. T. Rail..... 3¢4¢  
 Lanes' O. N. T., 100 ft., 1 inch..... \$3.00  
 Lanes' Standard, 100 ft..... 4.35  
 Lawrence Bros..... ft. 4 1/2¢  
 McKinnay's None Better..... ft. 3¢  
 McKinnay's Standard..... ft. 3¢4¢  
 Moore's, Wrt. Bracket Steel..... 3¢4¢  
 Stowell's Steel Rail, Plain..... 15¢  
**Rakes—**  
 Aug. 1, 1899, List:  
 Cast Steel..... 70¢@52¢  
 Malleable..... 70¢@10¢  
 Laven Rakes, Metal Head, per doz., 10 teeth, \$3.35; 24 teeth, \$3.50.  
 Fort Madison Red Head Lawn..... \$3.25  
 Fort Madison Blue Head Lawn..... \$3.00  
 Kohler's Lawn Queen, 24-tooth, per doz. \$4.00  
 Kohler's Paragon, 24-tooth, 2 doz. \$3.50  
 Kohler's Steel Garden, 14-tooth, per doz. \$3.50  
 Kohler's Malleable Garden, 14-tooth, per doz. \$2.50  
 Jackson Lawn, 24-tooth, per doz. \$4.50  
**Rasps, Horse—**  
 Heller Bros..... 60¢10¢10¢  
 McCaffrey File Co. Horse Rasps..... 60¢10¢10¢  
 See also Files.  
**Razors—**  
 Fox Razors, No. 42..... per doz. \$90.00  
 Fox Razors, No. 44..... per doz. \$24.00  
 Fox Razors, No. 52, Platina, per doz. \$24.00  
**Razor Straps—**  
 See Straps, Razor.  
**Reels—**  
**Fishing—**  
 Bendrix Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single action, Multiplying and Quadruple, all sizes..... 35¢  
 Bendrix Single Action Series, 102P and PN, 202P and PN, 102P and PN, 302P and PN, 304P and PN, 60304P and PN, 508 and 502N, 302 and 302N, 02034N, Competitor, 50¢  
 Bendrix Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2004N, 2004P and PN, 002904P and PN, 0024 and 0024N, 5009N and PN..... 40¢@10¢  
**Registers—**  
 Black Jap..... 50¢@50¢10¢  
 White Jap..... 40¢  
 Bronze..... 40¢  
 Steel Plated..... 40¢  
 Electro Plated..... 40¢  
**Riddles, Grain or Sand—**  
 1 1/2 in. per doz..... \$2.00@2.25  
 2 in. per doz..... \$2.25@2.50  
 3 in. per doz..... \$2.50@2.75  
**Rings and Ringers—**  
**Bull Rings—**  
 Steel..... 2 1/2 0.83 1.50 doz.  
 Copper..... 1.10 1.30 1.50 doz.

# Hog Rings and Ringers—

Hill's Rings..... gro. boxes, \$1.50@5.00  
 Hill's Ringers, G. I..... doz. 75¢  
 Blair's Rings..... per doz. \$5.75@6.00  
 Blair's Ringers..... per doz. \$0.90@1.00  
 Brown's Rings..... per doz. \$0.90@1.00  
 Brown's Ringers..... per doz. \$1.00@1.10  
 Perfect Rings..... per doz. \$0.90@1.00  
 Perfect Rings..... per doz. \$1.25@1.35  
 Rapid Rings..... per doz. \$1.00  
 Rapid Ringers..... per doz. \$3.50

## Rivets and Burrs—

Copper..... 50¢@50¢5¢  
 Iron or Steel:  
 Tinnars'..... 62 1/2¢@63 1/2¢10¢  
 Miscellaneous..... 6 1/2¢@6 1/2¢10¢

## Rivet Sets—See Sets.

## Roasting and Baking Pans—See Pans, Roasting and Baking.

## Rollers—

Acme Stowell's Anti-Friction..... 50¢  
 Barn Door, Sargent's List, 60¢10¢10¢  
 Cronk's Stay..... 60¢  
 Cronk's Brinkerhoff..... 60¢  
 Lane's Stay..... 33¢4¢5¢  
 Stowell's Barn Door Stay..... per doz. \$1.25

## Rope—

NOTE.—Carload lots, except on Jute Rope, 1/4c. per lb. less than the following prices, which are for small lots.

Manila, 7-16 in. and larger..... lb. @ 11 1/2¢  
 Manila..... 1/4-inch, lb. @ 12¢  
 Manila..... 1/4 and 5-16 in. lb. @ 12 1/2¢  
 Manila, Tarred Rope, 15 thread..... lb. @ 11 1/2¢  
 Manila Hay Rope Med'm lb. @ 11 1/2¢  
 Sial, 7-16 in. and larger, lb. @ 8¢  
 Sial..... 3/4-inch, lb. @ 8 1/2¢  
 Sial..... 1/4 and 5-16 in. lb. @ 9¢  
 Sial, Hay Rope, 2 to 10 ply..... lb. @ 8¢  
 Sial, Tarred, Medium Lath Yarn..... lb. @ 7 1/2¢  
 Cotton Rope..... lb. @ 15¢  
 Best, 1/4-in. and larger..... lb. @ 15¢  
 Med'm, 1/4-in. and larger..... lb. @ 10¢  
 Com. 1/4-in. and larger, lb. @ 10¢  
 Jute Rope, No. 1, 1/4 in. and up..... lb. @ 7 1/2¢  
 Jute Rope No. 2, 1/4 in. and up..... lb. @ 7 1/2¢  
**Wire Rope—**  
 Galvanized..... 50¢@5¢10¢  
 Plain..... 55¢@5¢10¢  
**Ropes, Hammock—**  
 Covert Mfg. Co..... 45¢2¢  
 Covert Saddlery Works..... 60¢

## Rules—

Boxwood..... 75¢10¢10¢10¢75¢10¢10¢  
 Ivory..... 40¢10¢10¢10¢10¢10¢10¢10¢  
 Lufkin's Steel..... 50¢10¢  
 Lufkin's Lumber..... 50¢10¢  
 Stanley R. & L. Co.:  
 Boxwood..... 75¢10¢10¢75¢10¢10¢10¢  
 Ivory..... 35¢10¢35¢10¢10¢

## Sad Irons—See Irons, Sad.

## Sand and Emery Paper and Cloth—

See Paper and Cloth.

## Sash Cords—See Cord, Sash.

## Sash Locks—See Locks, Sash.

## Sash Weights—

See Weights, Sash.

## Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

## Saw Frames—

See Frames, Saw.

## Saw Sets—See Sets, Saw.

## Saw Tools—See Tools, Saw.

## Saws—

Atkins' Circular..... 50¢50¢10¢  
 Atkins' Band..... 50¢10¢60¢  
 Atkins' Cross Cut..... 35¢5¢  
 Atkins' Mulay, Mill and Drag..... 50¢10¢  
 Atkins' One-Man Saw..... 40¢  
 Atkins' Wood Saws..... 40¢  
 Atkins' Band, Compass, &c..... 40¢  
 Diston Circular Solid and Insure 1 Tooth..... 50¢  
 Diston Band 2 to 14 in. wide..... 80¢  
 Diston Band 4 to 14..... 70¢  
 Diston Crosscut..... 45¢45¢10¢  
 Diston Narrow Crosscut..... 50¢50¢10¢  
 Diston Mulay, Mill and Drag..... 50¢  
 Diston Framed Woodsaw..... 35¢35¢7 1/2¢  
 Diston Woodsaw Blades..... 40¢40¢7 1/2¢  
 Diston Woodsaw Rods..... 25¢  
 Diston Handsaws, No. 12, 99, 9, 16, 1100, Ds, 120, 75, 77, 5..... 25¢35¢7 1/2¢  
 Diston Hand Saws, Nos. 7, 107, 10, 3, 1, 0, 0, Combination..... 30¢30¢7 1/2¢  
 Diston Compass Kysol..... 25¢25¢7 1/2¢  
 Diston Butcher Saws and Blades..... 35¢35¢7 1/2¢  
 C. E. Jennings & Co.'s..... 25¢@30¢5¢  
 Peace Circular and Mill..... 50¢  
 Peace Cross Cut, List Jan. 1, '99..... 50¢  
 Peace Hand, Panel and Rip..... 30¢  
 Richardson's Circular and Mill..... 50¢  
 Richardson's X Cut, List Jan. 1, '99..... 50¢  
 Simmonds' Hand &c..... 30¢  
 Simmonds' Circular Saws..... 50¢  
 Simmonds' Crescent Ground Cross Cut Saws..... 35¢  
 Simmonds' One-Man Cross Cut..... 40¢10¢  
 Simmonds' Gang Mill, Mulay and Drag Saws..... 45¢45¢2 1/2¢  
**Hack Saws—**  
 Diston Concave Blades..... 35¢  
 Diston Keystone..... 30¢  
 Diston Hack Saw Frames..... 40¢10¢  
 Griffin's complete..... 40¢10¢  
 Griffin's Hack Saw Blades..... 40¢10¢  
 Star Hack Saws and Blades..... 15¢10¢

# Scroll—

Barnes' No. 7, \$15..... 25¢  
 Barnes' Scroll Saw Blades..... 40¢  
 Barnes' Velopede Power Scroll Saw, without boring attachment, \$15..... 20¢  
 Lester, complete, \$10.00..... 15¢10¢  
 Rogers, complete, \$4.00..... 15¢10¢

## Scale Beams—

See Beams, Scale.

## Scales—

Family, Turnbull's..... 30¢@30¢10¢  
 Hatch, Counter:  
 Platform, 1 lb. by 1/4 oz..... doz. \$5.75  
 Two Platforms, 3 lb. by 1/4 oz..... doz. \$16.00

## Union Platform, Plain..... \$1.75@2.00

## Union Platform, Striped..... \$1.35@2.15

Chatillon's Eureka..... 35¢  
 Chatillon's Favorite..... 40¢  
 Chatillon's Grocers' Trip Scales..... 50¢  
 Pelouze Scales—Family, Candy Grocers and Postal..... New list net  
 "The Standard" R. B. and Wagon..... 50¢

## Scrapers—

Box, 1 Handle..... doz. \$2.25@2.75  
 Box, 2 Handle..... doz. \$2.75@4.00  
 Ship, No. 1, doz. \$3.50; No. 2..... \$2.25@2.40  
 Adjustable Box Scraper (S. R. & L. Co.)..... 30¢10¢  
 Foot, W. E. Pratt Mfg. Co..... \$1.15@1.25

## Screens, Window and Frames—

Bonanza Window Screens..... 50¢10¢2 1/2¢  
 Bonanza Window Screen Frames 40¢10¢5¢  
 Phillips' Window Screen Frames..... 60¢  
 Porter's Extension Window Screens..... 50¢10¢  
 Wabash Spring Adj. Screen..... 50¢

## Screw Drivers—

See Drivers, Screw.

## Screws—

Bench, Iron, doz. 1 in., \$3.00@3.25;  
 1 1/4, \$3.50@3.75; 1 1/2, \$4.00@4.50  
 Bench, Wood, Beech, doz. \$3.50@2.75  
 Hand, Wood..... 35¢@40¢  
 Hand, Grand Rapids..... 35¢  
 Hand, R. Bliss Mfg. Co..... 35¢

## Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... 75¢10¢5¢  
 Coach and Lag, Gimlet Point, list Oct. 1, '99..... 75¢10¢  
 Hand Rail, list Jan. 1, '16, 60¢10¢

## Jack Screws—

Millers Falls..... 50¢10¢10¢  
 Millers Falls, Roller..... 50¢10¢  
 P. S. & W..... 40¢5¢40¢10¢  
 Sargent..... 60¢10¢60¢10¢

## Machine—

List Jan. 1, '98.  
 Flat or Round Head, Iron, 50¢@50¢10¢  
 Flat or Round Head, Brass..... 50¢@50¢10¢  
 Flat or Round Head, Brass..... 50¢@50¢10¢

## Set and Cap—

Set (Iron or Steel)..... 60¢@60¢10¢  
 Sq. Hd. Cap..... 65¢  
 Hex. Hd. Cap..... 60¢

## Wood—

List Jan. 1, 1900.  
 Flat Head, Iron..... 80¢  
 Round Head, Iron..... 75¢  
 Flat Head, Brass..... 77 1/2¢  
 Round Head, Brass..... 75 1/2¢  
 Flat Head, Bronze..... 75 1/2¢  
 Round Head, Bronze..... 70¢  
 Drive Screws..... 80¢

## Scroll Saws—See Saws, Scroll.

## Scythes—

Grass Scythes:  
 Natural Finish, per doz. \$7.75@8.00  
 Pol. Blade..... per doz. \$3.25@3.50  
 Painted or Bronzed..... per doz. \$3.25  
 Weed and Bush..... per doz. \$7.50@7.75

NOTE.—The above are about the association prices to small trade, but are freely out by jobbers.

## Scythe Snaths—

See Snaths, Scythes.

## Seeders—

Raisin..... 25¢@30¢

## Sets—

## Awl and Tool—

Brad Awl and Tool Sets:  
 Wood Hdl., 10 Awls doz. \$2.00@2.25  
 Wood Hdl., 14 Awls, 6 Tools..... doz. \$2.50@2.80  
 Aiken's Sets, Aw and Tools:  
 No. 20, per doz. \$10.00, 60¢10¢60¢10¢5¢  
 Fray's Adj. Tool Hdl., Nos. 1, 12; 2, \$13; 3, \$12; 4, \$9; 5, \$7..... 50¢  
 Millers Falls Adj. Tool Hdl., No. 1; \$12; No. 4, \$12; No. 5, \$18..... 15¢10¢  
 Stanley's Excelsior:  
 No. 1, \$7.50; No. 3, \$4.00; No. 3, \$5.50..... 30¢10¢30¢10¢10¢  
 \$5.50..... 30¢10¢30¢10¢10¢

## Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe..... per doz. \$9.00

## Nail—

Round, assorted..... gro. \$3.25@3.75  
 Octagon..... gro. \$4.25@4.75  
 Knurled, Good..... gro. \$5.00@5.50  
 Buck Brothers..... 37 1/2¢  
 Cannon's Diamond Point, per gr. \$11.25  
 Snell's Corrugated, Cup Pt..... 50¢  
 Snell's Knurled, Cup Pt..... 60¢

## Rivet—

Regular list..... 70¢@70¢10¢5¢

## Saw—

Aiken's Genuine..... per doz. \$4.50@5.00  
 Aiken's Imitation..... per doz. \$3.00@3.10  
 Aiken's Criterion..... 40¢  
 Aiken's Adjustable..... 40¢  
 Bemis & Call Co.'s Cross Cut..... 30¢

# Bemis & Call Co.'s Plate..... 30¢

Bemis & Call Spring Hammer..... 30¢  
 Hamilton's Star and Mosa Chm..... 35¢  
 Hammer, Bemis & Call Co.'s new Pat. 45¢  
 Morrill's No. 1, \$15.00..... 40¢20¢  
 Nos. 3 and 4, Cross Cut, \$23.00, 40¢20¢  
 No. 5, Mill, \$31.00..... 40¢20¢  
 No. 10, \$15.50..... 40¢20¢  
 No. 11, \$16.00..... 40¢20¢  
 Taintor Positive, per doz. \$18..... 80¢

## Sharpeners, Knife—

Tanite Mills, per gross, \$14.40..... 25¢33¢45¢

## Shaves, Spoke—

Iron..... doz. \$1.00@1.25  
 Wood..... doz. \$1.75@2.25  
 Bailey's (Stanley R. & L. Co.)..... 50¢10¢  
 Goodell's, per doz. \$9.00..... 15¢10¢

## Shears—

Cast Iron..... 7 8 9 in.  
 Best..... \$16.00 13.00 8.00 gro.  
 Good..... \$15.00 15.00 17.00 gro.  
 Cheap..... \$5.00 6.00 7.00 gro.

## Straight Trimmers, &c.—

Best quality, Jap. 60¢10¢10¢70¢5¢  
 Nickel..... 60¢60¢5¢  
 Fair qual. Jap..... 75¢19¢80¢  
 Nickel..... 70¢10¢75¢  
 Tailors' Shears..... 40¢40¢10¢

## Acme Cast Shears..... 40¢40¢5¢

Heinrich's Tailors' Shears..... 40¢40¢5¢  
 National Cutlery Co., Nickel..... 40¢10¢  
 National Cutlery Co., En. Hdl., 70¢1 1/4  
 Seymour's, Jap..... 70¢  
 Seymour's Nickel..... 60¢  
 Seymour's Tailors' Shears..... 40¢  
 Wilkinson's Hedge..... 50¢  
 Wilkinson's Sheep..... 15¢

## Tinnars' Snips—

Forged Handles, Steel Blades..... 20¢10¢  
 Malleable Handles, Laid with Steel..... 40¢  
 Forged Handles, Steel Blades, Berlin..... 40¢10¢  
 Niagara Snips..... 40¢10¢  
 Seymour's..... 40¢40¢5¢

## Pruning Shears and Tools—

Cronk's Pruning Shears..... 35¢4¢  
 Diston's Combined Pruning Hook and Saw, per doz. \$18.00..... 35¢25¢10¢  
 Diston's Pruning Hook, per doz. \$12.00..... 25¢25¢10¢

## John T. Henry Mfg. Company..... 50¢5¢

Pruning Shears, all grades..... 50¢5¢  
 Orange Shears..... 50¢30¢  
 Grape..... 50¢10¢  
 Tree Pruners..... 75¢  
 Nagley's Pruning Shears..... per doz. \$8.00  
 P. S. & W. Co..... 35¢43¢10¢  
 Seymour's..... 60¢10¢10¢70¢5¢

## Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50¢  
 Patent Roller..... 60¢10¢60¢10¢5¢  
 Patent Roller Hatfield's, Sargent's list..... 80¢10¢80¢10¢75¢  
 Reading..... 70¢10¢75¢  
 R. & E..... 45¢10¢  
 Wrightsville, Hatfield Pattern..... 80¢

## Sliding Shutter—

Reading list..... 70¢10¢75¢  
 R. & E..... 60¢60¢10¢  
 Sargent's list..... 60¢5¢50¢10¢5¢

## Shells—

Brass Shells, Empty:  
 First quality, 1 gauge..... 60¢5¢  
 Club, Rival, Climax, 10 and 12 gauge..... 55¢5¢

## Paper Shells, Empty:

Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge.  
 Bue Club, New Climax, Price..... 35¢4¢10¢  
 Club, Yellow Rival, 10, 12, 16 and 20 gauge..... 15¢  
 Climax Club, League, Rival, 14, 16 and 20 gauge (\$7.50 list)..... 20¢5¢  
 Climax Club, League, Rival, 10 and 12 gauge..... 25¢5¢  
 Defence, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge..... 15¢  
 Trap and Metal Lined, 10, 12, 16 and 20 gauge..... 35¢4¢10¢5¢

## Shells, Loaded—



**Shovels and Tongs—**

Brass Head.....60¢50¢60¢10¢  
 Iron Head.....60¢50¢60¢10¢

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00 to 12.00  
 Buffalo Metallic Blue, S. S. & Co., per gr.:  
 14 & 16 10¢18 15¢20  
 12 & 16 10¢18 15¢20  
 Eclipse.....per gr. \$10.00  
 Electric Light.....per gr. \$12.00  
 Hunter's Genuine.....per gr. \$12.50  
 Shaker (Barber's Pat.) Flour Sifters.....  
 per doz., \$2.00.....30¢

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch.  
 Mesh 18, Nested, doz.....\$1.75 to 2.87  
 Mesh 20, Nested, doz.....85¢ to .90  
 Mesh 24, Nested, doz.....1.00 to 1.05

**Sinks—****Cast Iron—**

Standard Sink.....60¢ to 60¢10¢  
 Note.—There is not entire uniformity  
 in size used by jobbers.

**Wrought Steel—**

Columbus Galv'd and Enameled, 60¢5¢  
 Columbia, Painted.....45¢  
 L. & G. Mfg. Co., Galvanized.....50¢  
 L. & G. Mfg. Co., Enameled.....50¢

**Skins, Wagon—**

Cast Iron.....70¢ to 70¢10¢  
 Malleable Iron.....10¢ to 10¢50¢  
 Steel.....35¢ to 35¢5¢  
 L. I. & B. Co. Steel.....35¢

**Slates—**

"D" Slates.....50¢ to 10¢50¢10¢10¢  
 Unexcelled Noiseless Slates.....  
 60¢ to 10¢50¢10¢5¢  
 Wire Bound.....10¢ to 10¢50¢  
 Double Slates, add \$1 case, net.

**Slaw Cutters—See Cutters.****Slicers, Vegetable—**

Sterling \$2.00.....39¢5¢

**Snaps, Harness—**

German.....40¢ to 40¢10¢  
 Covert Mfg. Co.:  
 Derby.....35¢ to 35¢  
 High Grade.....45¢ to 45¢  
 Jockey.....45¢ to 45¢  
 Trojan.....45¢ to 45¢

**Covert's Saddlery Works:**

Banner.....60¢ to 60¢10¢  
 Crown.....60¢ to 60¢10¢  
 Triumph.....60¢ to 60¢10¢

**W. & E. T. Fitch Co.:**

Bristol.....40¢ to 10¢  
 Empire.....50¢ to 50¢  
 German.....40¢ to 40¢  
 National.....50¢ to 50¢  
 Perfect.....45¢ to 45¢  
 Clipper.....50¢ to 50¢  
 Champion.....40¢ to 40¢  
 Security.....40¢ to 40¢  
 Victor.....60¢ to 60¢

**Onel's Community:**

Solid Steel.....65¢ to 65¢10¢  
 Solid Steel.....65¢ to 65¢10¢  
 Sargent's Patent Guarded.....  
 60¢ to 60¢5¢10¢

**Snaths—**

Scythe.....45¢ to 45¢

**Snips, Tinner's—See Shears.****Soldering Irons—**

See Irons, Soldering.

**Spoke Trimmers—**

See Trimmers, Spoke.

**Spoons and Forks—****Silver Plated—**

Flat Ware.....50¢ to 10¢60¢10¢  
 Wm. Rogers Mfg. Co.....50¢ to 10¢  
 Miscellaneous—  
 German Silver.....60¢ to 10¢  
 Wm. Rogers Mfg. Co.:  
 185 German Silver.....60¢  
 Rogers' Silver Metal.....50¢ to 10¢

**Springs—****Door—**

Gem (Coll).....20¢  
 Star (Coll).....30¢  
 Torrey's Rod, 30 in., per doz. \$1.10 to 1.25  
 Warner's No. 1, per doz. \$1.50; No. 2,  
 \$3.40.....55¢ to 55¢10¢  
 Victor (Coll).....60¢ to 10¢60¢10¢5¢

**Carriage, Wagon, &c.**

Factory Shipments.  
 1 1/4 in and wider...Blk. Hf. Brl. Brl.  
 1 1/4 1 1/2 1 3/4 1 1/2 lb  
 Cliff's Bolster Springs.....35¢  
 Cliff's Seat Springs.....per pair 55¢

**Sprinklers, Lawn—**

Enterprise.....25¢ to 30¢  
 Philadelphia No. 1, per doz. \$12; No. 2,  
 \$15; No. 3, \$24.....30¢

**Squares—**

Nickel plated....{ List Jan. 5, 1900  
 Steel and Iron.....70¢ to 70¢  
 Rosewood Hdl. Try Square and T-Bevels  
 Bevels.....60¢ to 10¢10¢50¢  
 Iron Hdl. Try Squares and T-Bevels,  
 10¢ to 10¢10¢10¢10¢

**Diston's Try Sq. and T-Bevels.....60¢ to 10¢****Winterbottom's Try and Miter.....60¢ to 10¢****Squeezers—****Lemon—**

Wood, Common, gro., No. 0, \$5.25  
 to \$5.50; No. 1, \$6.25 to \$6.50.  
 Wood, Porcelain Lined:  
 Cheap.....doz. \$2.00 to \$2.75  
 Good Grade.....doz. \$3.00 to \$3.50

Tinned Iron.....doz. \$0.75 to 1.25  
 Iron, Porcelain Lined doz. \$2.00 to 3.25  
 Jennings' Star.....per doz. \$1.85 to 1.90  
 King.....per doz. \$2.00

**Staples—**

Barbed Blind.....lb. 8 1/4 to 9 1/4  
 Electricians', Association list, 75¢ to 10¢  
 Fence Staples, same price as Barbed  
 Wire. See Trade Report.  
 Poultry Netting, Staples.....80¢ to 10¢  
 Grand Crossing Tack Co.'s list.....75¢ to 10¢

**Steels, Butchers'—**

Dick's.....40¢  
 Foster Bros.....30¢  
 C. & A. Hoffmann's.....40¢  
 Nichols Bros.....50¢

**Steelyards—**

25¢ to 25¢10¢

**Stocks and Dies—**

Blacksmiths'.....50¢ to 40¢10¢  
 Gardner.....50¢  
 6 in. River.....25¢  
 Lightning Screw Plate.....35¢  
 Little Giant.....30¢  
 Re ce's New Screw Plates.....25¢ to 30¢  
 Curtis Reversible Ratchet Die Stock, 25¢

**Stone—****Scythe Stones—**

Pike Mfg. Co., list '95-'96.....33¢ to 33¢  
 Cleveland Stone Co., list Nov., '92, 33¢ to 33¢

**Oil Stones, &c.**

Pike Mfg. Co.:  
 Hindostan No. 1, per lb. 8¢  
 Sand Stone.....5¢  
 Turkey Oil Stone, Extra.....39¢ to 39¢  
 5 to 5 in.....\$1.50  
 Turkey Slips.....60¢  
 Lily White Washita.....60¢  
 Rosy Red Washita.....60¢  
 Washita Stone, Extra.....60¢  
 Washita Stone, No. 1.....40¢  
 Washita Stone, No. 2.....40¢  
 Lily White Slips.....40¢  
 Rosy Red Slips.....40¢  
 Washita Slips, Extra.....80¢  
 Washita Slips, No. 1.....70¢  
 Arkansas Stone, No. 1, 3/4 to 1 in. \$2.50  
 Arkansas Stone, No. 1, 1 1/4 to 2 in. \$3.50  
 India Oil Stones.....25¢  
 Tattle Mills:  
 Emery Oil, per doz. \$5.00.....50¢ to 60¢

**Stoners—****Cherry—**

Enterprise.....25¢ to 30¢

**Stops, Bench—**

Millers Falls.....15¢ to 10¢  
 Morrill's...per doz., No. 1, \$10.00; No. 2,  
 \$11.00, 40¢ to 20¢

**Stops, Window—**

Ives' Patent.....25¢ to 5¢  
 Taplin's.....45¢  
 Wilcox, Steel, per doz., \$0.00.....50¢

**Stove Boards—**

See Boards, Stove.

**Stove Polish—See Polish, Stove.****Straps, Box—**

Cary's Universal, case lots.....20¢ to 10¢

**Stretchers, Carpet—**

Cast Iron, Steel Points.....doz. 55¢ to 65¢  
 Cast Steel, Polished.....doz. \$2.25  
 Socket.....doz. \$1.75

**Stuffers, Sausage—**

Miles' Challenge, per doz. \$30.....50¢ to 50¢5¢  
 Enterprise Mfg. Co.....25¢ to 25¢7¢  
 National Specialty Mfg. Co., list Jan.  
 1, '97.....30¢

**Tacks Brads, &c.—**

See Trade Report.  
 List Jan. 15, '99.  
 Carpet Tacks, American.....90¢ to 40¢  
 American Cut Tacks.....90¢ to 30¢  
 Swedish Iron Tacks.....90¢ to 30¢  
 Swedish Upholsterers' Tacks.....90¢ to 30¢

**Gimp Tacks.....90¢ to 40¢****Lace Tacks.....90¢ to 30¢****Trimmers' Tacks.....90¢ to 30¢****Looking Glass Tacks.....90¢ to 30¢****Bill Posters' and Railroad Tacks.....90¢ to 30¢****Hungarian Nails.....80¢ to 20¢****Common and Patent Brads, 70¢ to 10¢****Trunk and Clout Nails.....80¢ to 20¢****NOTE.—The above prices are for****Mraight Weights. An extra 3¢ is given****Star Weights and an extra 10¢ is given****Standard Weights.****Miscellaneous—****Double Point Tacks.....90¢ to 5¢ or 5 tens****Steel Wire Brads, R. & E. Mfg.****Co.'s list.....50¢ to 10¢60¢****See also Nails, Wire.****Tanks, Oil—**

Emerald, S. S. & Co.....30-gal. \$3.20  
 Emerald, S. S. & Co.....60-gal., \$4.00  
 Queen City S. S. & Co., 60-gal. \$3.50  
 Queen City S. S. & Co., 60-gal. \$4.25

**Tapes, Measuring—**

American Asses' Skin.....10¢ to 10¢50¢  
 Patent Leather.....25¢ to 20¢5¢  
 Steel.....10¢ to 10¢  
 Chesterman's.....25¢ to 25¢5¢

Eddy's Steel.....40¢ to 40¢5¢  
 Eddy's Metallic.....33¢ to 33¢5¢  
 Keuffel & Esser Co., Steel and Metallic.  
 Lower list, 1899.....35¢  
 Lufkin's Steel.....33¢ to 35¢  
 Lufkin's Metallic.....30¢ to 30¢5¢

**Thermometers—**

Tin Case.....80¢ to 80¢10¢

**Ties, Bale—Steel.**

Standard Wire.....50¢ to 10¢5¢

**Ties, Wall—**

Cleveland, Steel.....per 1000, \$10.00

**Tinner's Shears, &c.—**

See Shears, Tinner's, &c.

**Tinware—**

Stamped, Japanned and Piced, sold  
 very generally at net prices.

**Tire Benders, Upsetters,**

&c.—See Benders and Upset-

ters, Tire.

**Tobacco Cutters—**

See Cutters, Tobacco.

**Tools—****Coopers'—**

L. & I. J. White.....20¢ to 20¢5¢

**Saw—**

Atkins' new list.....40¢  
 Simonds' Improved.....33¢ to 33¢  
 Simonds' Crescent.....25¢

**Ship—**

L. & I. J. White.....25¢

**Transom Lifters—**

See Lifters, Transom.

**Traps—Game—**

Oneida Pattern.....70¢ to 10¢75¢10¢  
 Newhouse.....45¢ to 50¢  
 Hawley & Norton.....65¢ to 70¢  
 Victor (Oneida Pattern).....75¢ to 75¢10¢  
 Star (Blake Pattern).....65¢ to 10¢70¢5¢

**Mouse and Rat—**

Mouse, Wood, Choker, doz. holes 9 to 9 1/2

Mouse, Round or Square Wire.....

doz. \$0.85 to 1.00

Marty French Rat and Mouse Traps

(Genuine):

No. 1, Rat, per doz. \$12.00; case of 24

\$10.50

No. 3, Rat, per doz. \$5.50; case of 50

\$5.00

No. 3 1/2, Rat, per doz. \$1.50; case of 72

\$4.00

No. 4, Mouse, per doz. \$3.50; case of 72

\$2.75

No. 5, Mouse, per doz. \$2.75; case of 150

\$2.25

Schuyler's Rat Killer, No. 1, per gr. \$30.00;

No. 2, per gr. \$30.00; Mouse, No. 3,

\$18.00.....5¢

**Fly—**

Balloon, Globe or Acme.....

doz. \$1.15 to 1.25; gro. \$12.00 to 14.00

Harper, Champion or Paragon

doz. \$1.25 to 1.40; gro. \$13.50 to 15.00

**Trimmers, Spoke—**

Bonney's Nos. 1 and 2.....40¢

Stearns.....25¢

**Trowels—**

Diston Brick and Pointing.....30¢

Diston Plastering.....25¢

Diston Standard Brand and Gar-

den Trowels.....40¢

Never-Break steel Garden Trowels.....

gro. \$7.00

Peace's Plastering.....90¢

Rose Brick and Plastering.....25¢

Woodrough & McParlin, Plastering, 25¢ to 10¢

**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list.....40¢

Dalay Stove Trucks, improved pattern

per doz. \$21.00

Model Stove Trucks.....per doz. \$18.50

**Tubs, Wash—**

No. 1 2 3

Galvanized, per doz. \$5.00 5.50 6.00

Galvanized Wash tubs (S. S. & Co.):

No. 1 2 3 10 20 30

Per doz \$5.25 6.00 6.75 6.50 7.25 8.00

**Twine—****Blender—**

Carload lots f.o.b. New York, Phila-

delphia or Boston.

White Sisal, 500 ft. to lb. per lb. 11 c

Standard, 500 ft. to lb. per lb. 11 c

Manila 500 ft. to lb. per lb. 14 c

Pure Manila, 550 ft. to lb. per lb. 15¢

Less than carloads add 1/4¢ per lb.

**Miscellaneous—**

Flax Twine.....BC B.

No. 9, 1/4 and 1/2-lb. Balls.....20¢

No. 12, 1/4 and 1/2-lb. Balls.....19¢

No. 18, 1/4 and 1/2-lb. Balls.....19¢

No. 24, 1/4 and 1/2-lb. Balls.....19¢

No. 36, 1/4 and 1/2-lb. Balls.....15¢

Chalk Line, Cotton, 1/2-lb. Balls.....

18¢ to 20¢

Cotton Mops, 6, 9, 12 and 15 lb. to

doz.....7¢ to 8¢

Cotton Wrapping, 5 Balls to lb.....

9¢ to 12¢

American 2-Ply Hemp, 1/4 and 1/2-lb.

Balls.....12¢ to 13¢

American 3-Ply Hemp, 1-lb. Balls.....

12¢ to 13¢

India 2-Ply Hemp, 1/4 and 1/2-lb.

Balls (Spring Twine).....10¢

India 3-Ply Hemp, 1-lb. Balls.....10¢

India 3-Ply Hemp, 1/2-lb. Balls.....  
 2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls.....

80¢ to 80¢

**Washers—****Leather, Axle—**

Solid.....80¢10¢10¢85¢  
 Patent.....85¢85¢5¢  
 Coils.....1¢ 1¢ 1¢ 1¢ per 100

**Iron or Steel—**

Size bolt... 5-16 3/4 1/2 3/8 3/16  
 Washers.....\$5.70 4.80 3.50 3.30 3.10  
 In lots less than one keg add 1/4¢ per lb., 5-lb. boxes add 1/4¢ to list.

**Cast Washers**

Over 1/2 inch, barrel lots... per lb., 2¢

**Washer Cutters—**

See Cutters, Washer.

**Washing Machines—**

See Machines, Washing.

**Water Coolers—**

See Coolers, Water.

**Weaners—**

Tyler's New Hater—No. 1 1/2 doz. \$3.45;  
 No. 2 \$3.70; No. 3 \$4.00; No. 4 \$4.30  
 Tyler's Hater—Nos. 1 and 2, 1/2 doz. \$1.70;  
 No. 3, \$2.00; No. 4, \$2.30.

**Wedges—**

Oil Finish.....lb. 4¢1/4¢  
 Aze Finish.....lb. 4¢1/4¢

**Weights, Sash—**

Eastern prices.....\$25.00  
 Western prices.....\$20.00

NOTE.—There is a wide difference in prices East and West, and some Foundries are naming lower prices than the above.

**Well Buckets, Galvanized**

See Pails, Galvanized.

**Wheels Well—**

8-in., \$1.75 to 1.85; 10-in., \$2.25 to 2.35;  
 12-in., \$2.75 to 2.85; 14-in., \$3.25 to 3.40

**Wire and Wire Goods—**

Brt. and Ann., 6 to 9.....70¢10¢  
 Brt. and Ann., 10 to 18.....72¢10¢  
 Brt. and Ann., 19 to 26.....75¢10¢  
 Brt. and Ann., 27 to 36.....75¢10¢  
 Cop'd and Galv., 6 to 9.....60¢10¢  
 Cop'd and Galv., 10 to 18.....60¢10¢  
 Cop'd and Galv., 19 to 26.....70¢10¢  
 Cop'd and Galv., 27 to 36.....72¢10¢  
 Tinned, 6 to 11.....70¢10¢  
 Tinned, 15 to 18.....70¢10¢  
 Tinned, 19 to 26.....70¢10¢  
 Tinned, 27 to 36.....65¢10¢  
 Annealed Wire on Spools.....60¢10¢  
 Brass and Copper Wire on Spools.....50¢10¢  
 Brass, list Feb. 26, '96.....20¢

Copper, list Feb. 26, '96.....15¢

Cast Steel Wire.....50¢

Stub's Steel Wire.....\$6.00 to \$2, 40¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

**Bright Wire Goods—**

Iron and Brass, list July 1, 1899.....85¢10¢85¢10¢5¢

Wire Cloth and Netting—

Galvanized Wire Netting 30¢10¢5¢2¢

Painted Screen Cloth per 100 ft.....\$1.30 to 1.40

Hardware Grade, Iron: 2 to 30 mesh.....sq. ft. 2 1/4¢3¢

20 x 20 mesh.....sq. ft. 3¢3 1/4¢

Galv. Hardware Grade, 2 to 5 mesh.....sq. ft. 3 1/4¢3 1/2¢

Galv. Hardware Grade, 6 to 8 mesh.....sq. ft. 4¢4 1/4¢

Wire Barb—See Trade Report

Wire, Ro. e—See Rope, Wire.

**Wrenches—**

Agricultural.....70¢10¢70¢10¢5¢

Baxter's S.....60¢10¢

Coe's Genuine.....40¢10¢5¢5¢

Coe's "Mechanics".....40¢10¢10¢5¢5¢

Aiken's Pocket (Bright).....\$2.00 to 3.30

Alligator.....60¢10¢10¢

**Bemis & Call's:**

Adjustable S.....35¢5¢  
 Adjustable S Pipe.....40¢  
 Briggs's Pattern.....30¢10¢  
 Combination Black.....40¢8¢  
 Combination Bright.....40¢8¢  
 Cylinder or Gas Pipe.....55¢  
 Extra Heavy.....45¢  
 Merrick's Pattern.....50¢  
 No. 3 Pipe, Bright.....55¢  
 Bindley Automatic.....90¢  
 Boardman's.....33 1/4¢  
 Bull Dog, W. & B.....60¢10¢  
 Donohue's Engineer.....40¢10¢  
 Eagle.....50¢10¢  
 Hercules.....70¢  
 Solid Handles, P. S. & W.....40¢10¢  
 Stevenson.....60¢10¢10¢

**Wrought Goods—**

Staples, Hooks, etc., list March 17 '92.....85¢5¢85¢10¢

**Yokes, Neck—**

Covert Saddlery Works, Trimmer 1.00¢5¢1

Covert Saddlery Works, Neck Yoke Centers.....70¢

**Yokes, Ox, and Ox Bows—**

Fort Madison's Farmers & Freighters' list net

**Zinc—**

Sheet.....lb. 6¢1/4¢ to 7¢

**PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.**

Lead, Foreign white, in Oil.....7 1/4¢ 9 1/4¢  
 Lead, American White, in Oil:  
 Lots of 500 lb or over.....@ 6¢  
 Lots less than 500 lb.....@ 6 1/4¢  
 Lead, White, in Oil, 25 lb tin  
 pails, add to keg price.....@ 1 1/4¢  
 Lead, White, in Oil, 13 1/2 lb tin  
 pails, add to keg price.....@ 1 1/4¢  
 Lead, White, in Oil, 1 to 5 lb as-  
 sorted tins, add to keg price.....@ 1 1/4¢  
 Lead, White, Dry in bbls.....5 1/4¢ 5 1/2¢  
 Lead, American, Terms: On lots of 500  
 lbs. and over, 60 days, or 2% for cash if  
 paid in 15 days from date of invoice.  
 Zinc, American, dry.....@ 4 1/4¢ 4 1/2¢  
 Zinc, Paris, Red Seal, dry.....@ 8 1/2¢  
 Zinc, Paris, Green Seal, dry.....@ 9 1/2¢  
 Zinc, Antwerp, Red Seal, dry.....@ 7 1/2¢  
 Zinc, Antwerp, Green Seal, dry.....@ 8 1/2¢  
 Zinc, V. M. French, in Poppy  
 Oil, Green Seal.....@ 11 1/4¢  
 lots of 1 ton and over.....@ 11 1/4¢  
 lots less than 1 ton.....@ 12¢  
 Zinc, V. M. French, in Poppy  
 Oil, Red Seal.....@ 10 1/4¢  
 lots of 1 ton and over.....@ 10 1/4¢  
 lots less than 1 ton.....@ 10 1/2¢  
 Zinc, V. M. French, Zinc—Dis-  
 counts to buyers of 10 bbl. lots of one or  
 assorted grades, 1%: 25 bbls., 2%: 50  
 bbls., 4%.

**Dry Colors.**

Black, Carbon.....@ 7¢ 20¢  
 Black, Drop, Amer.....@ 9 1/4¢ 4¢  
 Black, Drop, Eng.....@ 7¢ 11¢  
 Black, Ivory.....@ 15¢ 21¢  
 Lamp, Com.....@ 3¢ 5¢  
 Blue, Celestial.....@ 5 1/4¢ 8¢  
 Blue, Chinese.....@ 35¢ 40¢  
 Blue, Prussian.....@ 30¢ 38¢  
 Blue, Ultramarine.....@ 8¢ 35¢  
 Brown, Spanish.....@ 16¢ 1¢  
 Brown, Vandyke, Amer.....@ 14¢ 24¢  
 Brown, Vandyke, Foreign.....@ 24¢ 34¢  
 Carmine, No. 40.....@ 22¢ 27¢  
 Green, Chrome, ordinary.....@ 5¢ 6¢

Green, Chrome, pure.....@ 18¢ 29¢  
 Lead, Red, bbls. 1/2 bbls. and kegs:  
 Lots 500 lb or over.....@ 6¢  
 Lots less than 500 lb.....@ 6 1/4¢  
 Litharge, bbls. 1/2 bbls. and kegs:  
 Lots 500 lb or over.....@ 6¢  
 Lots less than 500 lb.....@ 6 1/4¢  
 Ochre, French Washed.....@ 14¢ 2 1/2¢  
 Ochre, Dutch Washed.....@ 4 1/4¢ 5¢  
 Ochre, American.....@ 10¢ 15¢  
 Orange Mineral, English.....@ 11¢ 12¢  
 Orange Mineral, French.....@ 11¢ 12¢  
 Orange Mineral, German.....@ 11¢ 12¢  
 Orange Mineral, American.....@ 11¢ 12¢  
 Red, Indian, English.....@ 4 1/4¢ 8 1/4¢  
 Red, Indian, American.....@ 3¢ 3 1/4¢  
 Red, Turkey, English.....@ 4¢ 6¢  
 Red, Tuscan, English.....@ 7¢ 10¢  
 Red, Venetian, Amer.....@ 100¢ 110¢  
 Red, Venetian, English.....@ 1,80¢ 2,10¢  
 Sienna, Italian, Burnt and  
 Powdered.....@ 3 1/4¢ 9 1/4¢  
 Sienna, Ital., Raw, Powd.....@ 3 1/4¢ 7 1/2¢  
 Sienna, American, Burnt.....@ 1 1/2¢ 2¢  
 Sienna, American, Raw.....@ 1 1/2¢ 2¢  
 Powdered.....@ 1 1/2¢ 2¢  
 Talc, French.....@ 100¢ 125¢ 60¢  
 Talc, American.....@ 90¢ 110¢  
 Terra Alba, French.....@ 100¢ 105¢  
 Terra Alba, English.....@ 55¢ 100¢  
 Terra Alba, American No. 1.....@ 45¢ 70¢  
 Terra Alba, American No. 2.....@ 45¢ 50¢  
 Umber, Turkey, Bnt. & Pow.....@ 2 1/4¢ 3 1/4¢  
 Umber, Turkey, Raw & Powd.....@ 2 1/4¢ 3 1/4¢  
 Umber, Bnt. Amer.....@ 1 1/2¢ 2¢  
 Umber, Raw, Amer.....@ 1 1/2¢ 2¢  
 Yellow, Chrome.....@ 10¢ 25¢  
 Vermilion, American Lead.....@ 10¢ 25¢  
 Vermilion, Quicksilver, bulk.....@ 72¢  
 Vermilion, Quicksilver, bags.....@ 73¢  
 Vermilion, English, Import.....@ 80¢ 95¢  
 Vermilion Chinese.....@ 85¢ 95¢

**Colors in Oil.**

Black, Lampblack.....@ 10¢ 14¢  
 Black, Chinese.....@ 36¢ 40¢  
 Blue, Prussian.....@ 32¢ 38¢  
 Blue, Ultramarine.....@ 12¢ 16¢

Brown, Vandyke.....@ 9 1/4¢ 13¢  
 Green, Chrome.....@ 8¢ 12¢  
 Green, Paris.....@ 8¢ 12¢  
 Sienna, Raw.....@ 10¢ 13¢  
 Sienna, Burnt.....@ 10¢ 13¢  
 Umber, Raw.....@ 9 1/4¢ 12¢  
 Umber, Burnt.....@ 9 1/4¢ 12¢

**Miscellaneous.**

Barytes, Foreign, 1/2 ton.....@ 19.00 to 21.00  
 Barytes, Amer. floated.....@ 19.00 to 20.00  
 Barytes, Crude.....@ 9.00 to 10.00  
 Chalk, in bulk.....@ 2.15 to 2.25  
 Chalk, in bbls.....@ 100¢ 35¢  
 China Clay, English.....@ 12.00 to 17.50  
 Cobalt, Oxide.....@ 100¢ 2.26 to 2.50  
 Whiting, Common.....@ 100¢ 42¢ to 53¢  
 Whiting, Gliders.....@ 54¢ to 64¢  
 Whiting, extra Gliders.....@ 58¢ to 68¢

**Putty.**

In bulk.....@ 1.90  
 In bladders.....@ 2.40  
 In cans, 12 lb to 25 lb.....@ 2.50  
 In cans, 1 lb to 5 lb.....@ 3.60

**Spirits Turpentine.**

In Southern bbls.....@ 46¢ 47¢  
 In machine bbls.....@ 47¢ 48¢

**Glue.**

Low Grade.....@ 13¢ 15 1/4¢  
 Cabinet.....@ 13 1/4¢ 16 1/4¢  
 Medium White.....@ 14¢ 16 1/4¢  
 Extra White.....@ 18¢ 23¢  
 French.....@ 12¢ 25¢  
 Irish.....@ 13 1/4¢ 16¢

**Animal, Fish and Veget-  
table Oils.**

Linseed, City, raw.....@ gal. 67¢ 69¢

Linseed, City, boiled.....@ 69¢ 71¢  
 Linseed, Sae and West'n, raw.....@ 67¢  
 Linseed, raw Calcutta seed.....@ 76¢  
 Lard, Prime.....@ 56¢ 58¢  
 Lard, Extra No. 1.....@ 48¢ 50¢  
 Lard, No. 1.....@ 41¢ 43¢  
 Cotton-seed, Crude.....@ 33¢ 34¢  
 Cotton-seed, Summer Yellow,  
 prime.....@ 38 1/4¢ 37¢  
 Cotton-seed Summer Yellow,  
 off grades.....@ 30¢ 36 1/4¢  
 Sperm, Crude.....@ ..  
 Sperm, Natural Spring.....@ ..  
 Sperm, Bleached Spring.....@ ..  
 Sperm, Natural Winter.....@ 57¢ ..  
 Sperm, Bleached Winter.....@ 52¢ ..  
 Whale, Crude.....@ 38¢ ..  
 Whale, Natural Winter.....@ 47¢ ..  
 Whale, Bleached Winter.....@ 49¢ ..  
 Menhaden, Crude, Sound.....@ 25¢ ..  
 Menhaden, Light Strained.....@ 29¢ 30¢  
 Menhaden, Bleached Winter.....@ 35¢ ..  
 Menhaden, Extra Bleached.....@ 37¢ ..  
 Tallow, prime.....@ 53¢ 54¢  
 Coconut, Ceylon.....@ 6 1/4¢ 6 1/2¢  
 Cod, Domestic.....@ 30¢ 33¢  
 Cod, Newfoundland.....@ 36¢ 38¢  
 Red Elaine.....@ 34¢ 36¢  
 Red Saponified.....@ 37¢ 40¢  
 Olive, Italian, bbls.....@ 27¢ 30¢  
 Neatfoot, prime.....@ 48¢ 50¢  
 Palm, prime, Lagos.....@ 54¢ 6¢

**Mineral Oils.**

Black, 20 gravity, 25 to 30 cold  
 test.....@ gal. 93¢ 104¢  
 Black, 20 gravity, 15 cold test.....@ 104¢ 111¢  
 Black, summer.....@ 94¢ 98¢  
 Cylinder, light filtered.....@ 146¢ 172¢  
 Cylinder, dark filtered.....@ 113¢ 116¢  
 Paraffine, 903-907 gravity.....@ 143¢ 151¢  
 Paraffine, 903 gravity.....@ 136¢ 144¢  
 Paraffine, 883 gravity.....@ 124¢ 124¢  
 Paraffine, red, No. 1.....@ 143¢ 151¢  
 In small lots 1/4¢ advance.

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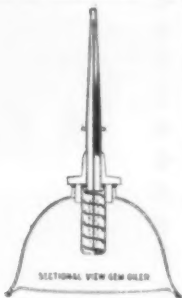
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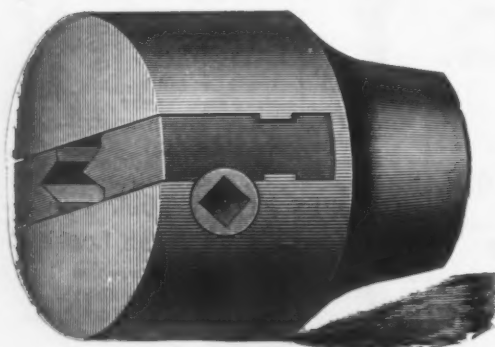
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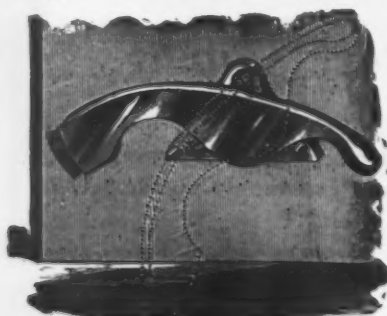
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\$ .55	.60	.65	.70	.85	.95	1.05 per doz.
6	7	8	9	10	11	12 inch.

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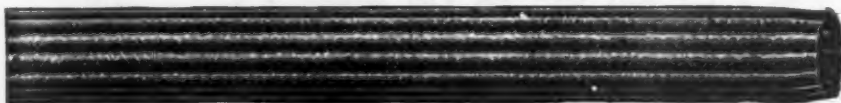
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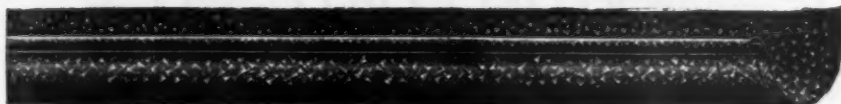
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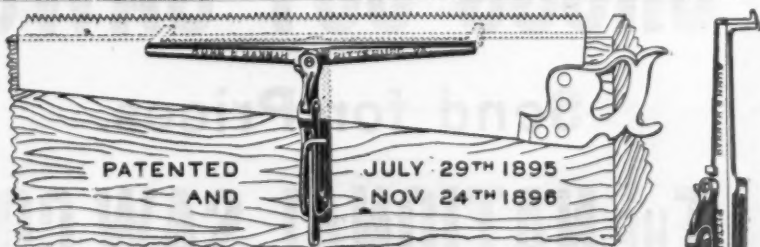
## Steel Giant Grubber.

One of the most useful implements yet invented.  
With this machine you exterminate the Sapling,  
Grub or Bush, as it lifts it out of the ground, root  
and body.

**A GREAT LABOR SAVER.**

Does the work of five men.  
Send for particulars and testimonials.

**New Century Manufacturing Co.,**  
48 East 8th Street, New York.



SELF-FASTENING FOLDING SAW CLAMP.

THE BEST CLAMP on the market. Can be attached firmly to anything  
without Screws, Nails or Braces. Weighs only 3½ pounds. Can be  
folded up and carried in pocket.

Send for Circulars and Prices.

GUNN & HANNAH, Mfrs., - Pittsburgh, Pa.

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## "PANCOAST" VENTILATORS

PERFECT GOODS and Lowest Prices are our strong points.

NATIONAL PANCOAST VENTILATOR CO.,

Main Office, 723 Drexel Bldg., Philadelphia.

Price and Catalogue Sent on Application.

Clark Expansive  
AND

WRIGHT'S  
Jennings  
BITS.



Warranted.  
Conn. Valley Mfg. Co.,  
CENTERBROOK, CONN., U. S. A.

## JUNIOR

(TOY)

## Lawn Mower

A NOVELTY.



Cuts the grass  
as well as the  
large mowers.

Width of cut,  
7 inches.

No. K.

Ratchet action  
on blade.

Packed two dozen in a case.

**CRESCENT BRASS & IRON CO.,**  
DETROIT.

TRY

**Mugford's Half Tones,**  
Wood Cuts and Electrotypes.

"You See Them Everywhere,"

**A. MUGFORD,**  
ENGRAVER and ELECTROTYPYER.  
HARTFORD, CONN.

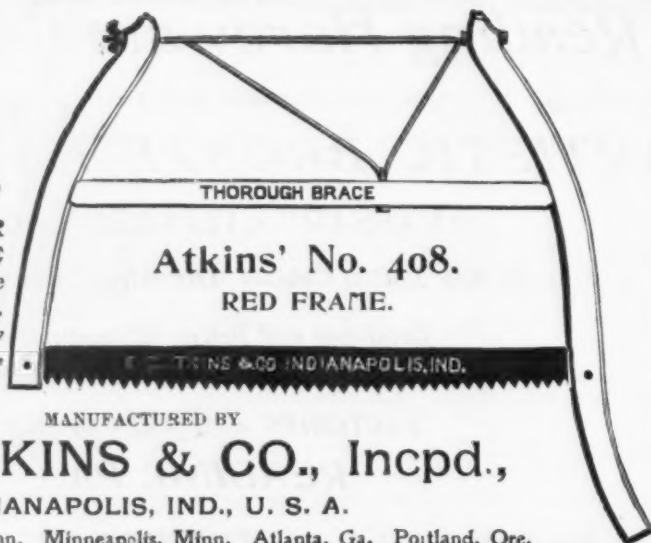
New York Office, 130 Liberty Street.



## Atkins Wood Saws.

EXAMINE OUR  
1900 CATALOGUE  
and see the extensive  
line we manufacture.

We give best quality  
for the money of any  
on the market.



MANUFACTURED BY

**E. C. ATKINS & CO., Incpd.,**  
INDIANAPOLIS, IND., U. S. A.

Branches: Memphis, Tenn. Minneapolis, Minn. Atlanta, Ga. Portland, Ore.

Now is the  
**TIME TO ORDER.**

**REMEMBER  
ATKINS**

Hand Saws,  
Wood Saws,  
Cross Cut Saws,

are not sold to Cata-  
logue Houses.



# Simonds Mfg. Co.,

NEW YORK, N. Y. PORTLAND, ORE.  
FITCHBURG, MASS. CHICAGO, ILL. SEATTLE, WASH.

Simonds Mfg. Co., Ltd.,  
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Simonds Saw Co.,  
San Francisco, Cal.

**"NEVER TWIST" and "NEW CENTURY"  
SCREW DRIVERS**

Write for Prices.

BRAUNSDORF-MUELLER CO., Elizabeth, N. J.

## JOHN LOYD



Machine Knives, Shear Blades,  
Presses and Dies.

Nos. 558 to 562 Water Street, New York.

**CHAMPION EGG OPENER.**



PATENTED JAN. 4, 1887.  
State Iron Age W. R. HARTIGAN, Collinsville, Conn.

A perfect work-  
ing article, once  
used never with-  
out. Gives perfect  
satisfaction. No  
daubing or pieces  
of shell by using  
this Egg Opener.  
No competition;  
fast seller and a  
money maker.  
Nickel Plate, 25c;  
Silver Plate, 50c.  
Send for discount  
on large quanti-  
ties to

**BLACKSMITHS' LEATHER APRONS.**

Largest Mfrs. in U. S.

Split Leather, Sheep, Hog, Cow and Horse Hide.

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# CROSS CUT SAWS

Send for Prices.

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YOU CAN OBTAIN PROMPTLY the latest  
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COMPANY, Publishers and Booksellers, 232-238 William St., N. Y.

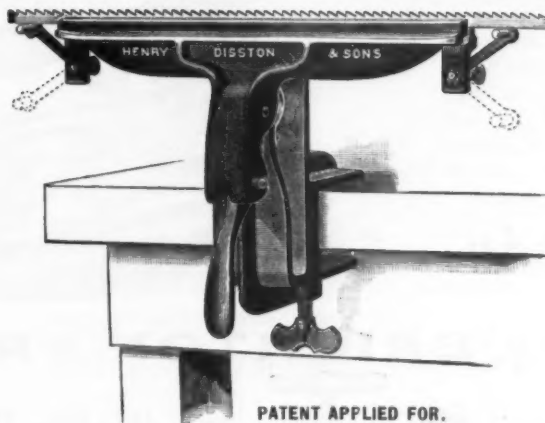
# DISSTON NEW SAW CLAMPS

**STRONG and DURABLE.**

**ADJUSTABLE**

**No. 4.**

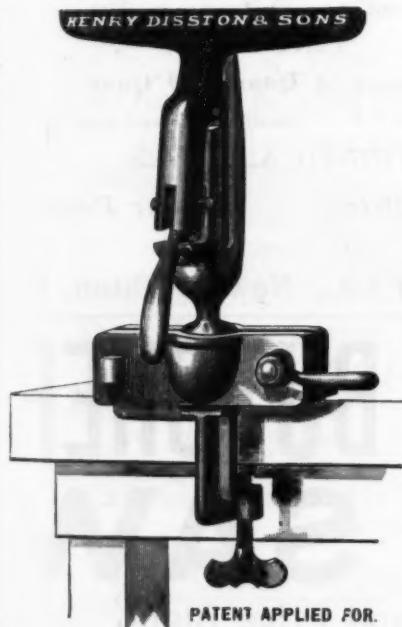
PARTICULARLY  
ADAPTED  
FOR USE  
WHEN FILING  
NARROW  
BAND SAWS,  
ETC.



PATENT APPLIED FOR.

The Supporting  
Arms are  
Adjustable and can  
be regulated  
to suit the various  
widths  
of saws to be filed,  
the blade being  
maintained in  
the same position  
throughout  
and  
by slightly raising  
Lever, can be moved  
along.

PRICE, - - - \$17.00 PER DOZEN.



PATENT APPLIED FOR.

**IMPROVED**

**NO. 1 ADJUSTABLE  
BALL AND SOCKET CLAMP.**

This Clamp is now made with a Lever Tightener, so arranged as to hold the saw blade firmly in position whilst permitting its instant release by a slight movement of the Lever.

The Ball and Socket Feature of the No. 1 Clamp enables the operator to adjust it to any angle or position desired.

HEREAFTER THE ABOVE WILL BE SENT IN PLACE  
OF FORMER NO. 1 CLAMP WHEN ORDERED. . . . .

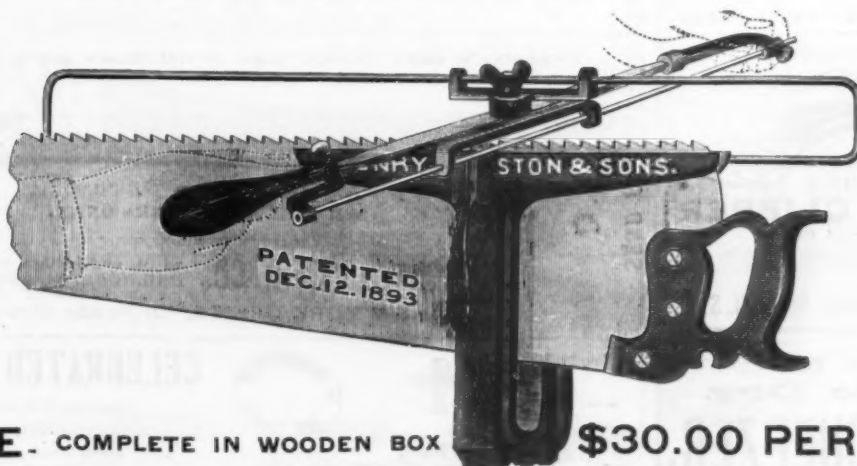
PRICE, \$14.00 PER DOZEN.

**3. SAW FILING GUIDE and CLAMP.**

ATTACHED ONLY TO THE No. 3 CLAMP.

READILY

ADJUSTED.



EASILY

OPERATED.

PRICE. COMPLETE IN WOODEN BOX \$30.00 PER DOZEN.

**HENRY DISSTON & SONS, Inc.,** Keystone Saw Tool Steel and File Works, **Philadelphia, Penna.**



Write  
for  
Circulars.

To Cut Grass from 6 to 10 inches  
high. 25-inch Knives.

This Mower can be used with a pony and a boy to guide the mower, or one man to pull and a boy to guide. Double train of gears, large reel with patent cylinder knives, rear cut train of gears on both sides, Enos patent bed knife, patent draft irons, shifting clutch, weight 110 pounds.

**Supplee Hardware Co.,**  
PHILADELPHIA.

## The PONY or Two-Man Mower.



**NICOL & CO.**  
Manufacturers of  
Special and Light  
**HARDWARE.**  
EXCLUSIVE AGENCY GIVEN.  
67 W. Washington St.,  
Chicago, Ill., U. S. A.  
Established 1890

**THE BEST  
KEY-HOLE SAW HANDLE**



**NEVER SLIP**  
W. C. LADD, Maker, Bristol, Conn.  
WRITE FOR PRICES.

**"BOSTON" AUTOMATIC  
ICE  
PICK**  
Makes a clean break and  
does not waste the ice.  
Send for Circular  
and Price.  
DODGE MACHINE SCREW CO., - BOSTON.

**JACK IRON  
BRASS**  
Send for **CHAIN**  
Price.  
WE MAKE NOTHING ELSE.

**HALE BROS., Worcester, Mass.**



Sample, by mail, 25 cents.  
**GEM NAIL CLIPPER**  
Cuts, Cleans and Files.  
It is a neat, well made, nickel plated article. Put  
up attractively and sold cheaply. Send for circulars  
and prices.  
The H. C. Cook Co., Ansonia, Conn., U. S. A.

WE MAKE THE  
**Squeeze Dry  
LEMON SQUEEZER.**

**HAGEN & REID, Troy, N. Y.**

## BRIGHTON FRUIT PRESS

FOR MAKING

JELLIES, FRUIT SYRUPS, EXTRACTS,  
LARD, CHEESE, &c.

Is the simplest and most effective machine made.

Three Sizes:

2 Quart, 4 Quart, 10 Quart.

Steel Screw and Side Arms.

TINNED ALL OVER.

Get our Price. Get our Presses.

MANUFACTURED BY

**LOGAN & STROBRIDGE IRON CO., New Brighton, Pa.**

No. **115** OUR NEW **BUTCHER  
SAW**  
Send Your Orders Early.  
**THIS IS A WINNER...**

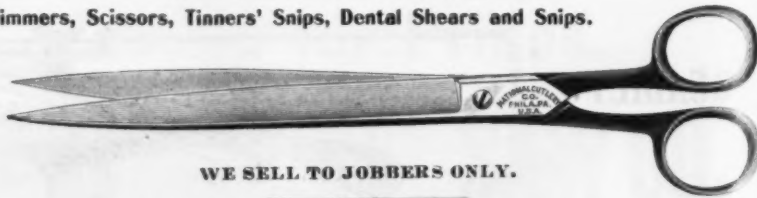
The Latest, Best, and Price Right.

**C. E. JENNINGS & CO.,**  
101 Reade Street, New York.

## THE NATIONAL CELEBRATED SHEARS.

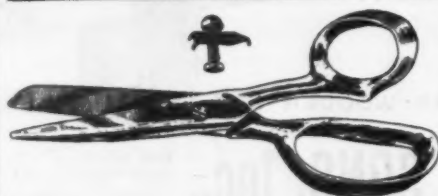
A Complete Line and Fully Warranted.

Trimmers, Scissors, Tanners' Snips, Dental Shears and Snips.



WE SELL TO JOBBERS ONLY.

**NATIONAL CUTLERY CO.,** 3d St. and Lehigh Avenue.  
PHILADELPHIA, PA., U. S. A.  
NEW YORK OFFICE, 101 Reade Street.



## CELEBRATED LANG SHEARS

Patented Bolt and Tension Spring.

Manufacturers of full line of Bent and Straight  
High Grade, Steel Laid Shears.  
Send for Catalogue.

**LANG CUTLERY WORKS**  
Cedar Rapids, Ia.

47 YEARS.

ESTABLISHED 1833.

47 YEARS.

Celebrated Buck Brothers' Tools Stamped With the Buck's Head.  
Chisels, Gouges, Plane Irons, Carving Tools, Nail Sets,  
Screw Driver Bits, Razors and  
**ICE PICKS.**



**BUCK BROTHERS, MILLBURY, MASS.**  
**HIGHEST AWARD PARIS EXPOSITION, 1889.**



ESTABLISHED 1833.

INCORPORATED 1892.

**THE L. & I. J. WHITE CO.,** MANUFACTURERS OF **EDGE TOOLS.**

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Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &amp;c. Full Line Chisels.

New York Office, 45 Centre St

75 YEARS.

ESTABLISHED 1825.

75 YEARS.

CELEBRATED **HEINISCH** SHEARS  
ACKNOWLEDGED THE BEST.



Tailors' Shears, Trimmers, Scissors, Tinner's Snips, etc.

**R. HEINISCH'S SONS CO.,**

New York Office, 90 Chambers Street.

NEWARK, N. J.

NOT CONNECTED WITH ANY SHEAR COMBINATION.

**SOCKET FIRMER CHISELS**  
BEVELED EDGES.

**CHARLES BUCK TOOLS**

have a world wide reputation.

SEND FOR CATALOGUE OF FULL LINE.

Screw Driver Bits, Reamers, Cupped Nail Sets, Gouges, etc., etc.

**MILLBURY EDGE TOOL WORKS,**  
CHARLES BUCK, Proprietor.  
**MILLBURY, MASS., U. S. A.**

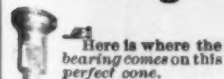
**KNIVES.**

Send for Illustrated Catalogue of Full Line.



Shoe, Butcher and Kitchen  
Cutlery, Carpenters'  
Drawing Knives, Screw  
Drivers, etc.

**C. J. KIMBALL COMPANY,**  
Bennington, N. H., U. S. A.

**Cattaraugus Cone Bearing Shears**

Here is where the  
bearing comes on this  
perfect cone.

have no equal for easy cutting. They are made from  
the best of materials and every pair is warranted to  
give satisfaction. We shall be glad to quote you prices.



This is the lock  
where the bolt fast-  
ens to the lower  
blade.

**CATTARAUGUS CUTLERY CO.,** - - Little Valley, N. Y.

**THE CELEBRATED**  
**RED SEAL SHEARS.**

MANUFACTURED ONLY BY

**THE ACME SHEAR CO..**

BRIDGEPORT, CONN.

The  
"ORIGINAL  
JENNINGS"  
AUGERS and  
AUGER BITS.



Genuine have  
"Russell Jennings"  
stamped in full  
on the Round of  
each Bit.

FOR SALE BY ALL HARDWARE JOBBERS.

The Russell Jennings Mfg. Co., Deep River, Ct., U. S. A.

Established 1774.



HIGH  
GRADE **AUGER BITS.**

(BLACK TWIST)

**JOB T. PUGH, PHILADELPHIA.**

THE

**Ford Ship Augers.**

SECOND TO NONE.

Prices Right.

**THE FORD BIT CO..**

HOLYOKE, MASS.

**American Tool Chest Company,**  
NEW YORK.

MANUFACTURERS OF

**TOOL CHESTS**

Of all sizes, complete with tools, for Hardware, Toy Notion and Variety trades.

Factory and Salesroom,

200 West Houston Street, near Varick  
Also Machinists' Tool Chests, empty, Tool Cabinets  
and Work Benches. Illustrated Catalogue  
and prices furnished on application

**The Household Cobbler.**

Write us for prices.

We are closing out these sets be-  
low cost. Get our prices. They  
will astonish you.

**M. Schray's Sons & Co.**

49 Blue Island Ave.,

CHICAGO, ILLS.

THE  
SUPERIORITY OF

Griffin's Improved  
**Pressed Steel**  
**Shelf Bracket**  
IS UNQUESTIONED.

Attractive { IN DESIGN,  
IN FINISH,  
IN PRICE.

SOLD BY ALL LEADING JOBBERS.

Write for prices.

**THE GRIFFIN MFG. CO.. - Allegheny, Pa.****PLAIN AND RATCHET BIT BRACES.**

The largest line made in U. S.



Send  
for  
Cata-  
logue.

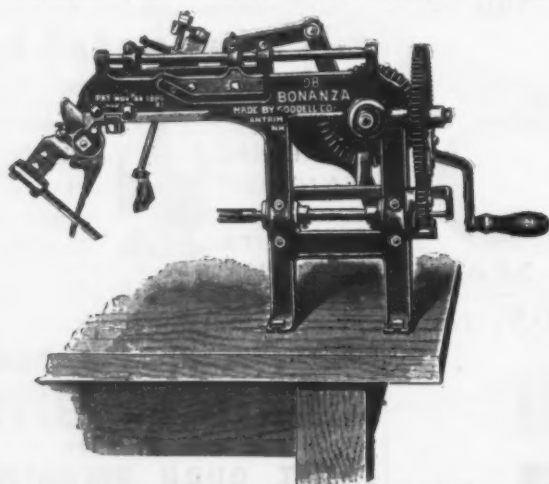
**MASON & PARKER,**  
Winchendon, - - - - Mass.

Also Makers of other  
**Hardware Specialties.**

JOHN H. GRAHAM &amp; Co. Agents, 113 Chambers St., N. Y.



## THIS IS OUR BUSY SEASON ON APPLE PARERS.



Don't wait until the last minute before placing order. It's the man who gets his order in first who gets the goods, and the man who has the goods who sells them.

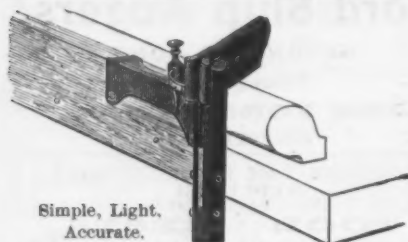
Our line comprises the most desirable parers for evaporators, bakers, hotels restaurants and family use. Catalogue free.

This cut represents the '88 Bonanza Parer and Corer, especially designed for evaporating; not a cheap machine but a machine cheap. Retail price, \$6.50. It is faster, more durable, and does better work than any \$10.00 parer on the market.

### GOODELL COMPANY,

New York Office, 10 Warren St.

Factory and Main Office, Antrim, N. H.



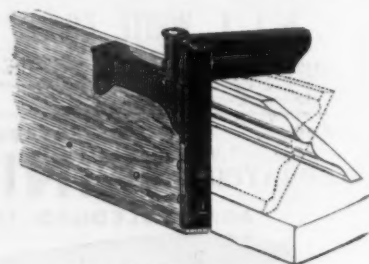
Simple, Light,  
Accurate.

May be used on top of the wood.  
May be attached directly to bench.  
May be mounted on board fastened to bench.  
Any ordinary saw may be used.  
Easily adjusted to any angle.



SEAVY'S PATENT MITRE BOX

Manufactured by  
**THOMSON BROS. & CO., Lowell, Mass**  
New York Office and Selling Agents: Smith & Hemenway  
Co., 296 Broadway, New York.



Weight, 2 pounds  
May be folded to occupy little space.  
With it you can cut stock of any size.  
List, \$3.00 per doz. Send for disc



Send for illustrated leaflet describing our new  
**DOMINION PATTERN  
COW TIE and STALL FIXTURE.**  
ONEIDA COMMUNITY, Ltd.,  
Niagara Falls, N. Y.



### SUMMER Ice Tools.

Ice Tongs Axes, Saws, Scales.  
Send for Catalogue.

**WM. T. WOOD & CO.,**  
Arlington, Mass., U. S. A.

**We don't make spurious goods.**  
Our Pump Chain is galvanized after being made.  
You can't afford to sell your customers chain made out of galvanized wire.

**We are headquarters for**

**GALVANIZED  
PUMP CHAIN,  
GALVANIZED AWNING RODS.**

Quality, The Best.



Prompt Shipment.

**GARLAND CHAIN CO.,**

New York Sales Agents, Hendricks & Class, 150 Nassau St.  
Southern Sales Agents, Wier & Wilson, Baltimore, Md.

**RANKIN STATION, PA.**



Established 1832. Cable Address, "BLISS."

MANUFACTURERS OF  
Wood Turnings, Hand,  
Bench and other Screws,  
Mallets, Handles, Vises,  
Clamps, Tool Chests,  
Croquet, Lithographs,  
Wood Toys, Novelties,  
and also the Celebrated  
**Wood's Patent Car Gate,**  
For Street and Steam  
Railroad Cars.  
**The R. BLISS MFG. CO.,**  
PAWTUCKET, R.I., U. S. A.



### MONCE'S NOVELTY GLASS CUTTERS. INTERCHANGEABLE LOCK STENCIL.

No. 1 Cutter, born 1871, and has been worthy of extensive imitation, that is why I keep it before you.  
We make others.  
**S. G. MONCE, UNIONVILLE, CONN.**





**CENTRAL HARDWARE CO.**

PHILADELPHIA, PENNA.

**Not in the Combination.****MANUFACTURE OF SHELF HARDWARE  
IS OUR SPECIALTY.****Low Prices.  
Quick Delivery.**

Write for Catalogue and Price List.

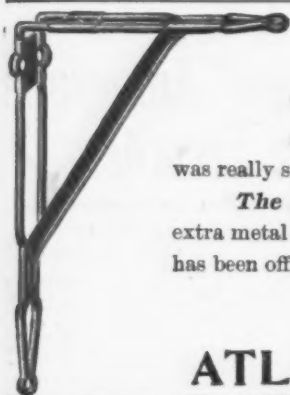
Our prices will warrant you in sending us your business.

**STANLEY RULE & LEVEL CO.,**

NEW BRITAIN, CONN., U. S. A.

**Improved Carpenters' Tools.**

SOLD BY ALL HARDWARE DEALERS.

**HEAVIER.**

YES! We're making the Bradley Shelf Bracket heavier than heretofore. Why? Well, principally to meet the demands of the foreign buyer. It was hard for him to believe that the Bracket was really strong enough to hold up a good sized load.

*The Bracket is still light and graceful*, but undoubtedly just so much better on account of the extra metal that has been put into it. The improvement has added nothing to the cost, or rather the extra cost has been offset by improved methods of manufacture so that there is no increase in the price.

ORDER DIRECT OR THROUGH YOUR JOBBER.

**ATLAS MFG. CO., New Haven, Conn., U. S. A.****NEW YORK STAMPING COMPANY,**

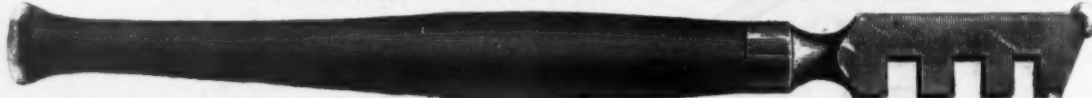
North 11th and Berry Streets, BROOKLYN, N. Y., U. S. A.

Manufacturers of Pressed and Stamped Steel Ware Specialties. Sole makers of the Eclipse Brand Curry Combs, made of the Finest Cold Rolled Steel, in great variety of styles and sizes, and of superior quality and finish, and salable in all the markets of the world; also makers of Fine Polished Steel Cooking Utensils, including the Famous Acme Frying Pans. Catalogue free on application.



**Barrett's  
Glass  
Cutters  
Standard**

Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all



other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.

**The VELOX**

ball bearing grindstone runs as easy as a bicycle. All parts are made from steel, and will last a lifetime. The stones are the best obtainable. When folded and crated they occupy but little space. With the Velox one man does the work of two. If your jobber does not handle them, write to us

**VELOX MACHINE WORKS,**

307-321 Dearborn Street, - CHICAGO

**Brown's Patent, Seamless, Oil Chamber Truss and Clip Bar Skeins.**

The Best Cast Iron Skein in the World.  
Interchangeable with D. V. & Co.  
and Anderson Truss.



YOUR ORDERS ARE SOLICITED.

W. B. MITCHELL, Agent, Manufacturer. Office: 80 Michigan Avenue, Chicago, U. S. A. WORKS AT GRAND CROSSING, ILLS.

GERMAN GIMLET  
DOUBLE CUT GIMLET  
SCREW DRIVER  
BELL HANGERS'

**BITS.**

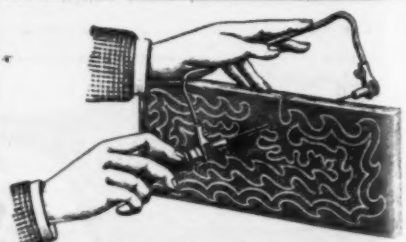
Send for Catalogue.

NORTON MFG. CO., - Chester, Conn.

**AUGERS**

Ship Nut Machine All kinds Made to  
Augers Augers Augers Augers Order.

SNELL MFG. CO.,  
Fiskdale, Mass., U. S. A.

**Jones Ratchet  
COPING SAW.**

Can be quickly set at any angle. Well made, low  
in price. Send for circular.

JONES & DOMMERSNAS,  
31 and 33 Indiana Street, - CHICAGO

# GOODELL BUTCHERS' SAWS.

*Filed, Set, Tempered,  
Ground and Sharpened.*

The manner in which these Blades are put up as shown in the cut, cannot fail to commend itself to every dealer in, and larger consumer of, Butchers' Saws. Instead of being obliged to carry a dozen different lengths, he can carry these coils and cut off any length desired.

Coil A, soft,  $\frac{5}{8}$  in. wide, list ea., - - \$4 50

Coil B, soft,  $1\frac{1}{4}$  in. wide, list ea., - - 7.50

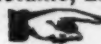
WRITE FOR DISCOUNTS.

Goodell-Pratt Company, Greenfield, Mass., U. S. A.



## MEASURING TAPES

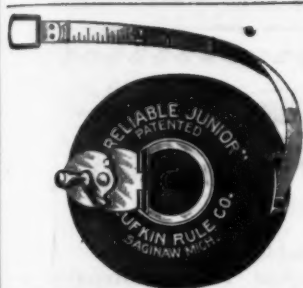
Steel, Metallic, Linen, Pocket, Ass Skin, Pat. Leather, Bend and Pressed Leather, etc.



There is not another line of tapes in the market that will equal ours in quality, accuracy, workmanship, neatness and every other way.

**LUFKIN RULE CO., SAGINAW, MICH., U. S. A.**

New York City Office and Store, - 291 STEWART BUILDING.



## STANDARD CHAIN CO.,

PITTSBURGH, PA.

**Hardware Chain, Ship Chain, Railroad Chain.**

**High Grade Chain of all kinds.**

**PROMPT SHIPMENTS.**

**WRITE FOR PRICES.**

## Warranted Better than the Best ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough untempered steel, never to break or bend. Only Anvil made in the United States fully warranted as above.

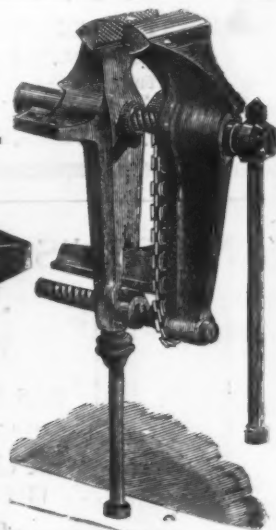
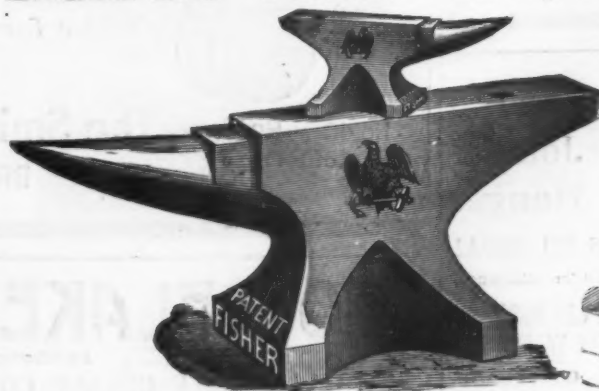
### FISHER DOUBLE-SCREW VISE

IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

ESTABLISHED 1848.  
MORE THAN 200 DIFFERENT PATTERNS.

None Genuine without our Trade-Mark.

**EAGLE and "FISHER" Stamp.**




**EAGLE ANVIL WORKS, Trenton, N. J.**

Sold in New York by our Agents, J. C. McCarty & Co., 10 Warren St., The Russell & Erwin Mfg. Co., 45 Chambers St.



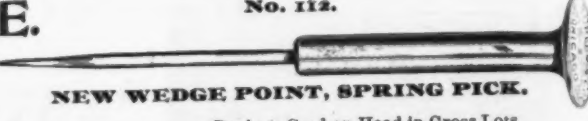
**1 3 SIZE.**

No. 104.



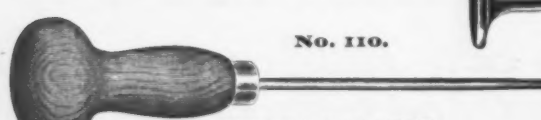
**NEW WEDGE POINT.**  
Dealer's Card on Head in Gross Lots.

No. 112.



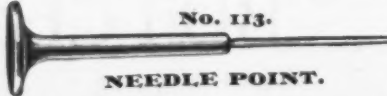
**NEW WEDGE POINT, SPRING PICK.**  
Dealer's Card on Head in Gross Lots.

No. 110.



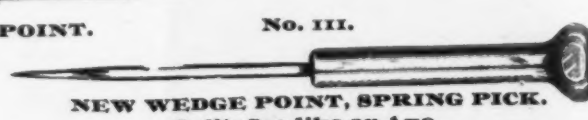
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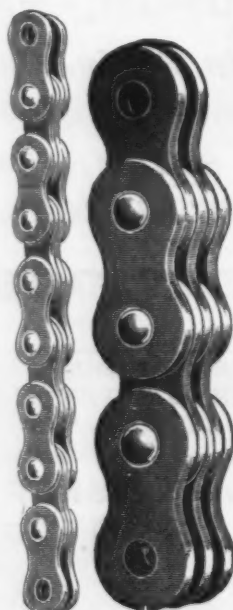
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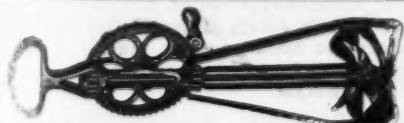
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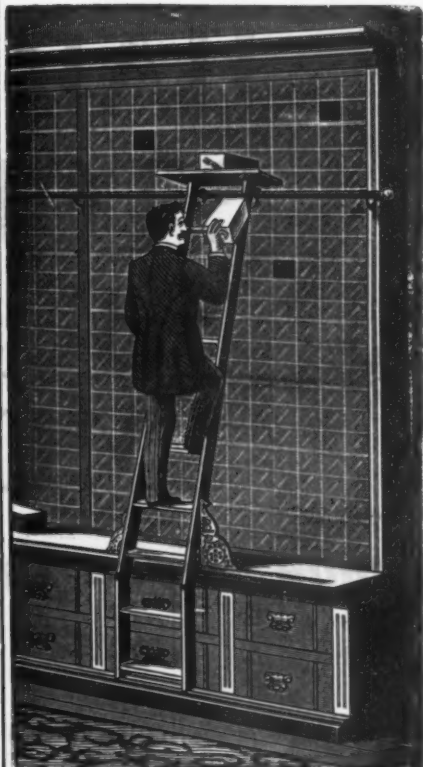
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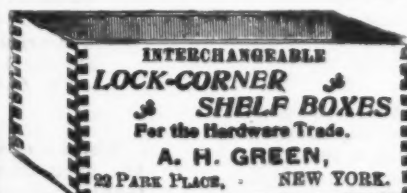
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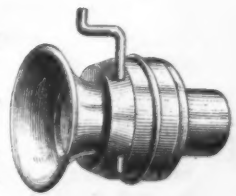
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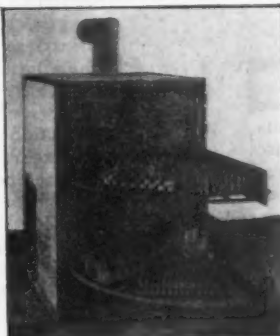
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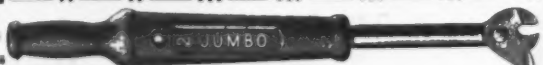
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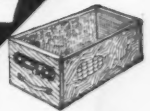


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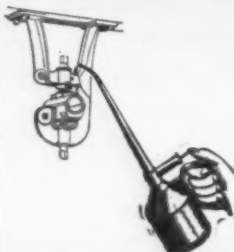
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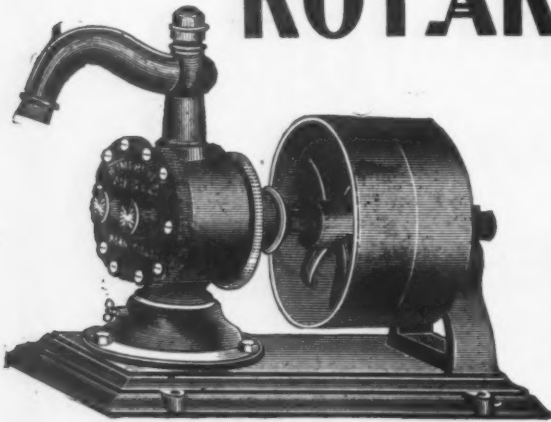
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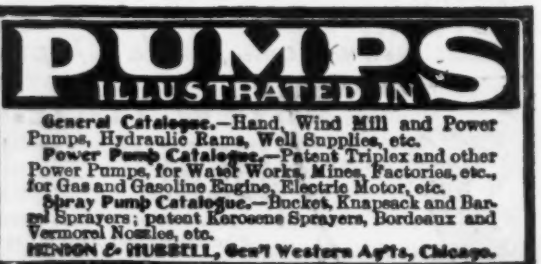
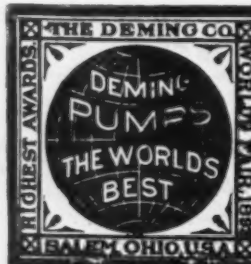
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|         | 105 | 11 x 8 without Headings     | .25         |  |
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| 104 | 7 x 4 with Column Headings  | .15         |
| 105 | 11 x 8 without Headings     | .25         |
| 106 | 8 x 12 with Column Headings | .30         |
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|------------------|-------------|
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| RIDDLES          | SCREEN WIRE |
| RINGERS          | SCREENS     |
| RINGS            | SCREWS      |
| RINGS            | SCREWS      |
| RIVETS AND BURRS | SCREWS      |

## SIEVES SIFTERS SKATES SKEINS

| RIVETS  |     |               |             |  |
|---------|-----|---------------|-------------|--|
| ARTICLE | No. | Size, inches. | Price each. |  |
| Timers  | 8   | 12 x 10 x 11  | .20         |  |
| Iron    | 10  | 13 x 11       | .25         |  |
| Black   | 12  | 14 x 12       | .25         |  |
| 1000    | 14  | 15 x 13       | .25         |  |
| Pigs    | 16  | 16 x 14       | .25         |  |
|         | 17  | 17 x 15       | .25         |  |
| Just    | 18  | 18 x 16       | .25         |  |
| May 10  | 19  | 19 x 17       | .25         |  |
| 1000    | 20  | 20 x 18       | .25         |  |
|         | 21  | 21 x 19       | .25         |  |
|         | 22  | 22 x 20       | .25         |  |
|         | 23  | 23 x 21       | .25         |  |
|         | 24  | 24 x 22       | .25         |  |
|         | 25  | 25 x 23       | .25         |  |
|         | 26  | 26 x 24       | .25         |  |
|         | 27  | 27 x 25       | .25         |  |
|         | 28  | 28 x 26       | .25         |  |
|         | 29  | 29 x 27       | .25         |  |
|         | 30  | 30 x 28       | .25         |  |
|         | 31  | 31 x 29       | .25         |  |
|         | 32  | 32 x 30       | .25         |  |
|         | 33  | 33 x 31       | .25         |  |
|         | 34  | 34 x 32       | .25         |  |
|         | 35  | 35 x 33       | .25         |  |
|         | 36  | 36 x 34       | .25         |  |
|         | 37  | 37 x 35       | .25         |  |
|         | 38  | 38 x 36       | .25         |  |
|         | 39  | 39 x 37       | .25         |  |
|         | 40  | 40 x 38       | .25         |  |
|         | 41  | 41 x 39       | .25         |  |
|         | 42  | 42 x 40       | .25         |  |
|         | 43  | 43 x 41       | .25         |  |
|         | 44  | 44 x 42       | .25         |  |
|         | 45  | 45 x 43       | .25         |  |
|         | 46  | 46 x 44       | .25         |  |
|         | 47  | 47 x 45       | .25         |  |
|         | 48  | 48 x 46       | .25         |  |
|         | 49  | 49 x 47       | .25         |  |
|         | 50  | 50 x 48       | .25         |  |
|         | 51  | 51 x 49       | .25         |  |
|         | 52  | 52 x 50       | .25         |  |
|         | 53  | 53 x 51       | .25         |  |
|         | 54  | 54 x 52       | .25         |  |
|         | 55  | 55 x 53       | .25         |  |
|         | 56  | 56 x 54       | .25         |  |
|         | 57  | 57 x 55       | .25         |  |
|         | 58  | 58 x 56       | .25         |  |
|         | 59  | 59 x 57       | .25         |  |
|         | 60  | 60 x 58       | .25         |  |
|         | 61  | 61 x 59       | .25         |  |
|         | 62  | 62 x 60       | .25         |  |
|         | 63  | 63 x 61       | .25         |  |
|         | 64  | 64 x 62       | .25         |  |
|         | 65  | 65 x 63       | .25         |  |
|         | 66  | 66 x 64       | .25         |  |
|         | 67  | 67 x 65       | .25         |  |
|         | 68  | 68 x 66       | .25         |  |
|         | 69  | 69 x 67       | .25         |  |
|         | 70  | 70 x 68       | .25         |  |
|         | 71  | 71 x 69       | .25         |  |
|         | 72  | 72 x 70       | .25         |  |
|         | 73  | 73 x 71       | .25         |  |
|         | 74  | 74 x 72       | .25         |  |
|         | 75  | 75 x 73       | .25         |  |
|         | 76  | 76 x 74       | .25         |  |
|         | 77  | 77 x 75       | .25         |  |
|         | 78  | 78 x 76       | .25         |  |
|         | 79  | 79 x 77       | .25         |  |
|         | 80  | 80 x 78       | .25         |  |
|         | 81  | 81 x 79       | .25         |  |
|         | 82  | 82 x 80       | .25         |  |
|         | 83  | 83 x 81       | .25         |  |
|         | 84  | 84 x 82       | .25         |  |
|         | 85  | 85 x 83       | .25         |  |
|         | 86  | 86 x 84       | .25         |  |
|         | 87  | 87 x 85       | .25         |  |
|         | 88  | 88 x 86       | .25         |  |
|         | 89  | 89 x 87       | .25         |  |
|         | 90  | 90 x 88       | .25         |  |
|         | 91  | 91 x 89       | .25         |  |
|         | 92  | 92 x 90       | .25         |  |
|         | 93  | 93 x 91       | .25         |  |
|         | 94  | 94 x 92       | .25         |  |
|         | 95  | 95 x 93       | .25         |  |
|         | 96  | 96 x 94       | .25         |  |
|         | 97  | 97 x 95       | .25         |  |
|         | 98  | 98 x 96       | .25         |  |
|         | 99  | 99 x 97       | .25         |  |
|         | 100 | 100 x 98      | .25         |  |

This cut shows, in reduced size, one of the uses for which Price Card No. 100 may be employed. The word Belting is cut from the Price Card Pastors.

A section of The Iron Age Hardware Price Card Pastors, reduced size. Printed on gummed paper.

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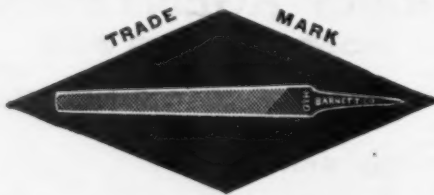
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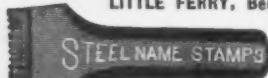
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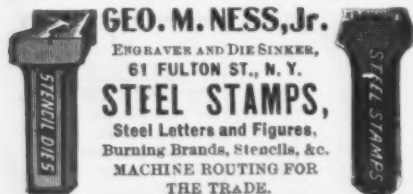
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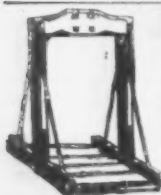
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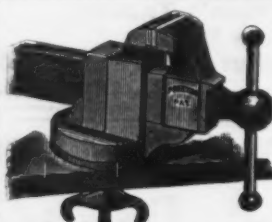
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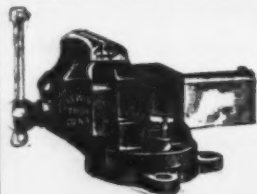
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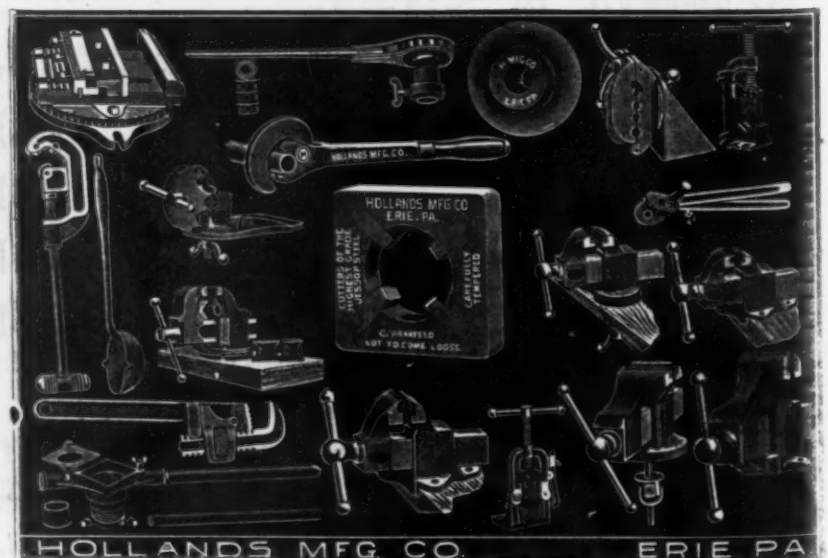


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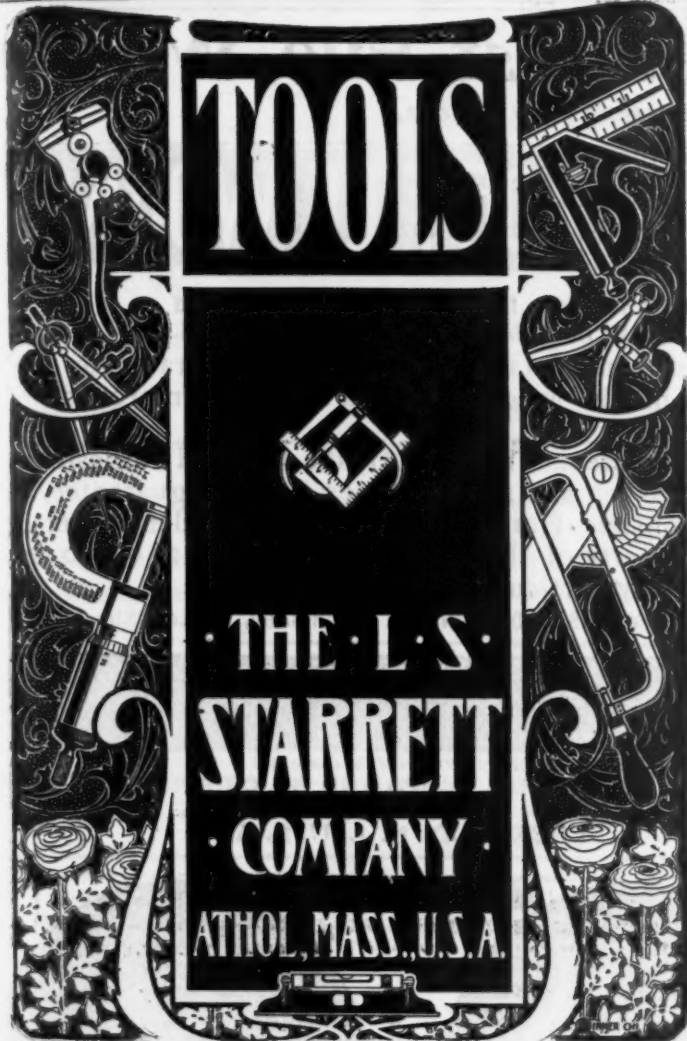
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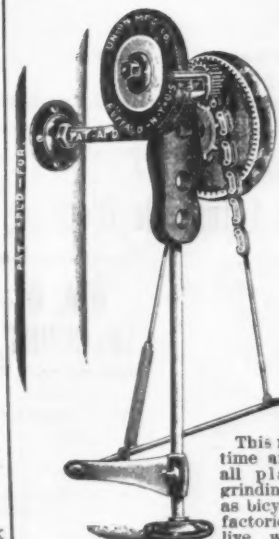
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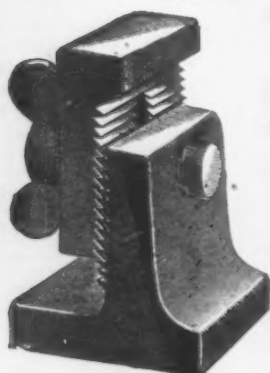
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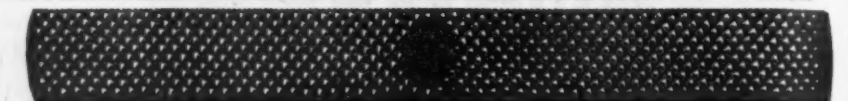


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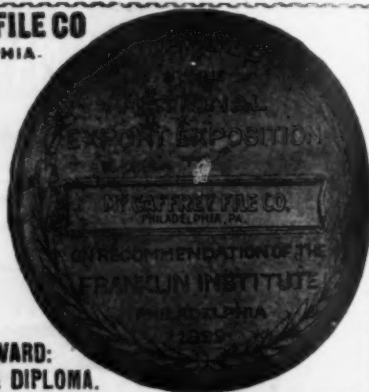
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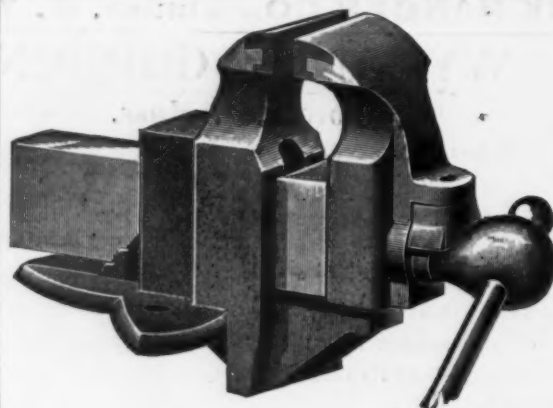
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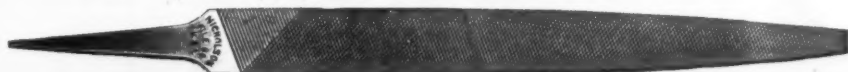
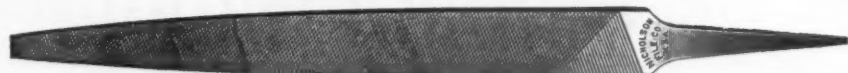
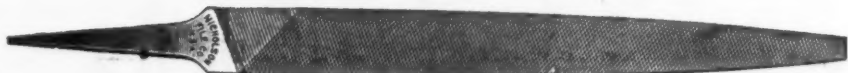
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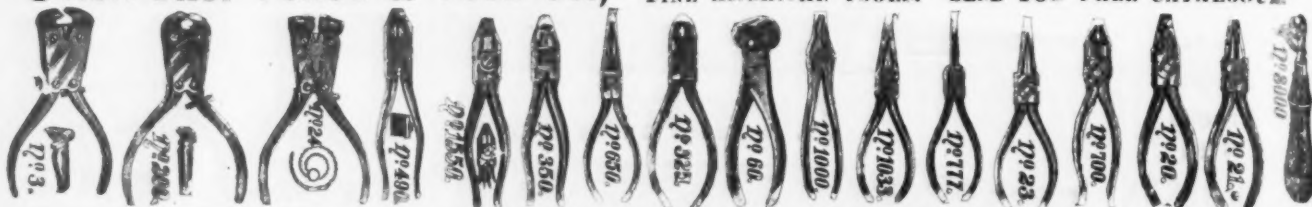
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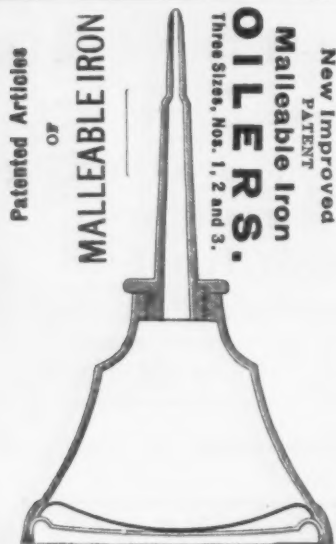


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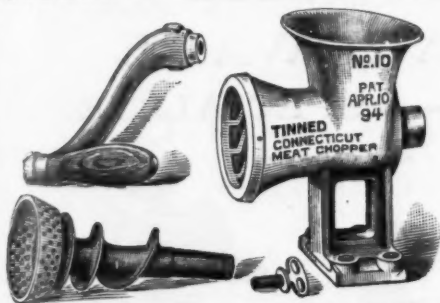
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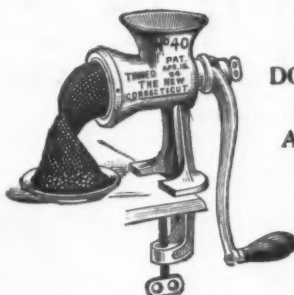


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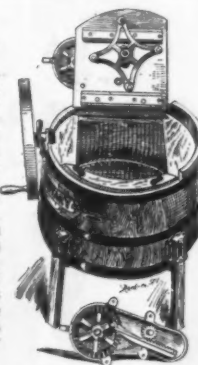
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all. Washer operates  
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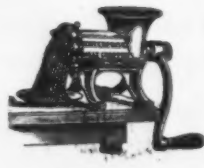
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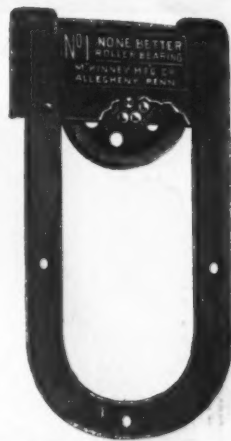


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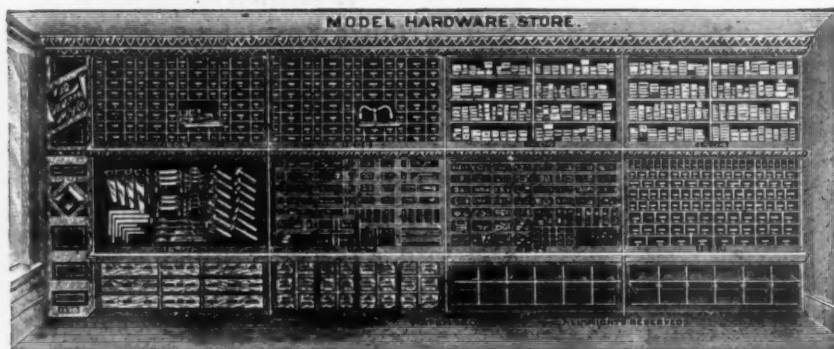
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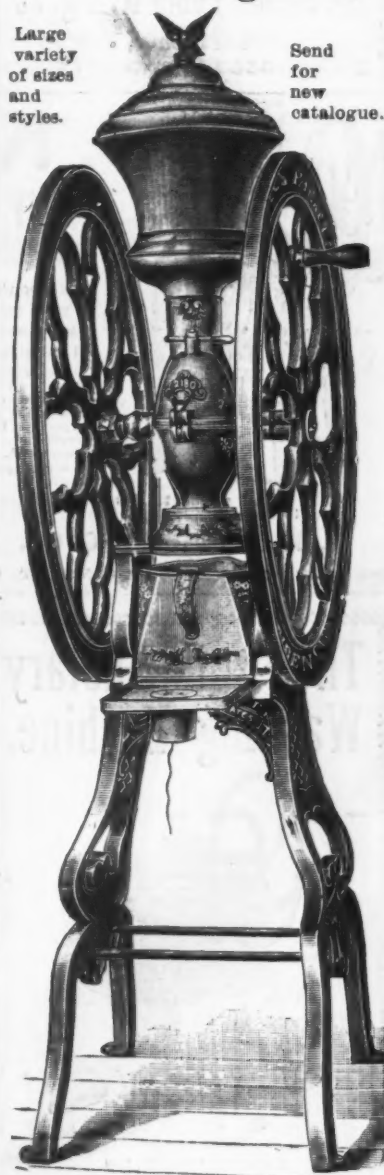
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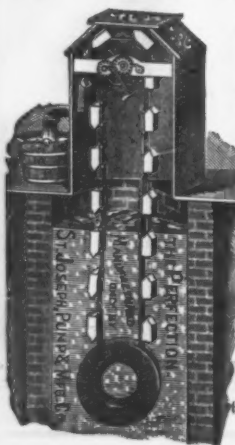
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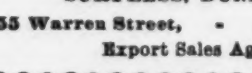
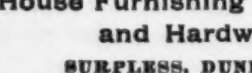
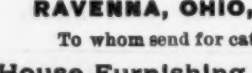
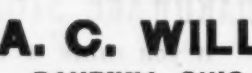
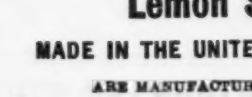
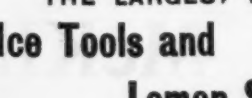
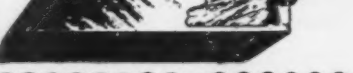
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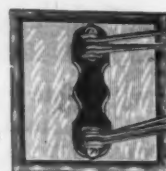
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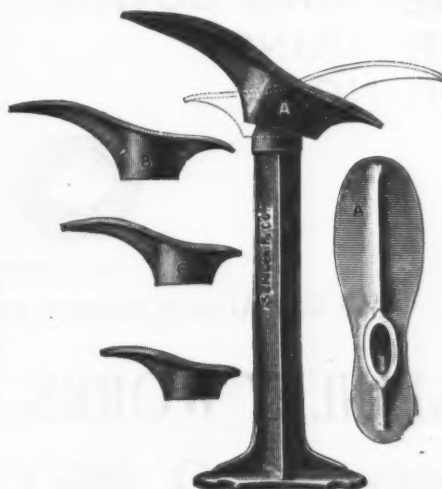


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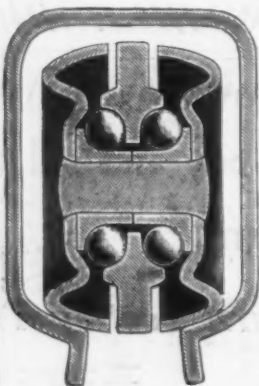
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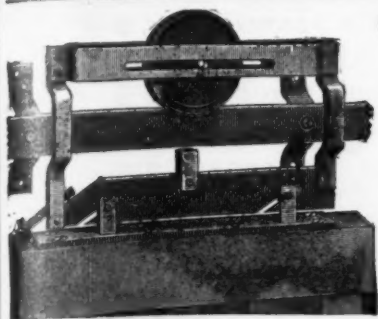
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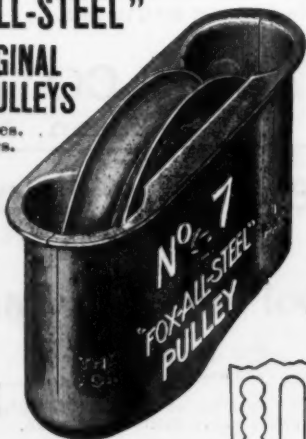
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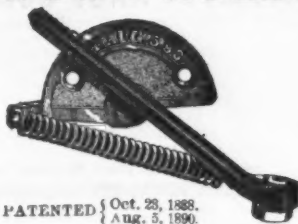
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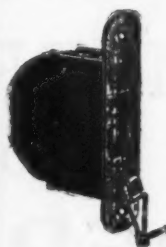
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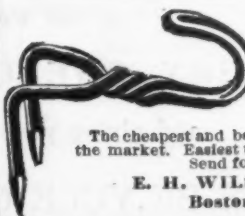
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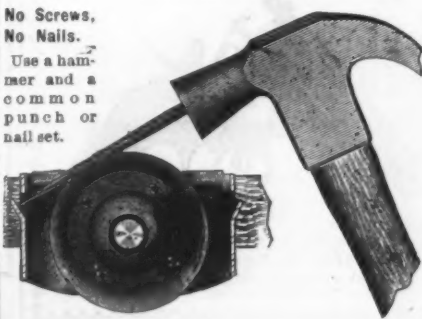
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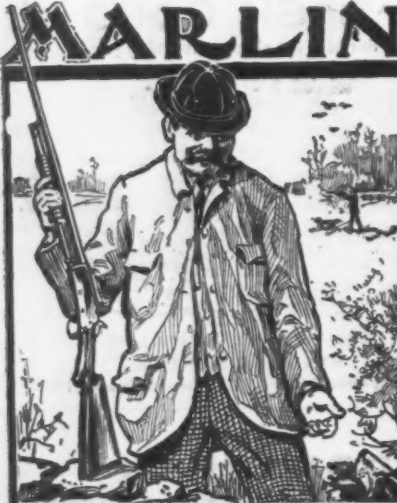
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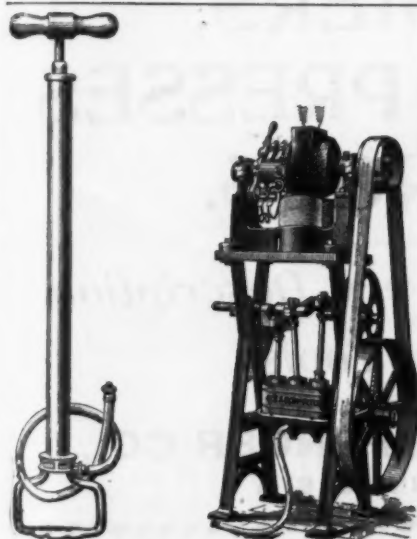
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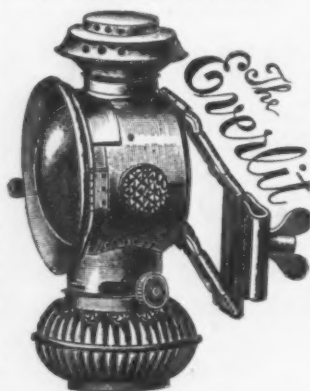
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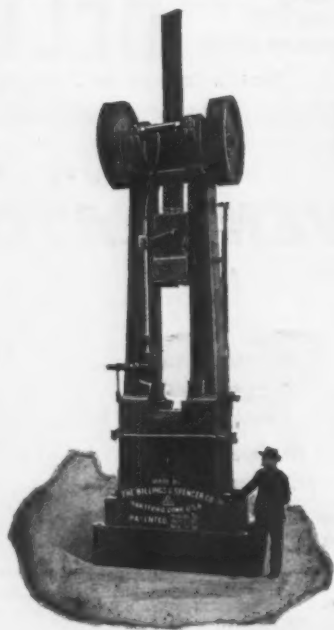
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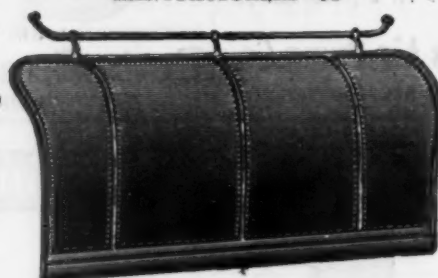
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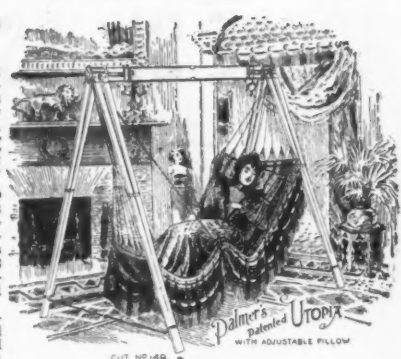
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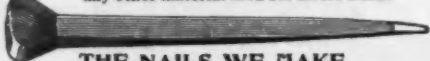
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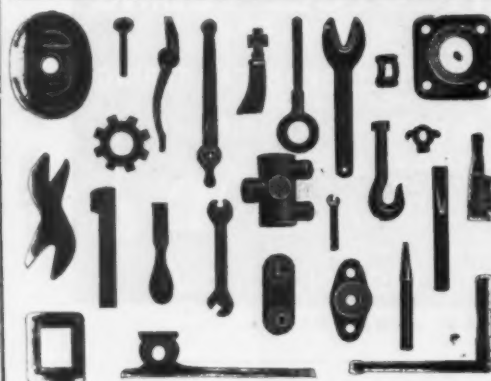
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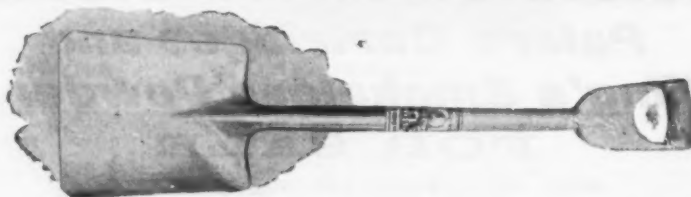


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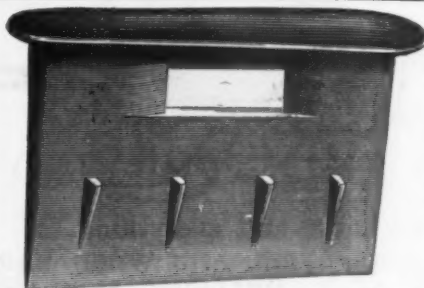
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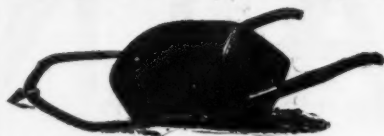
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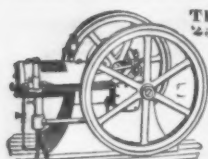
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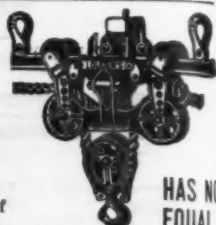
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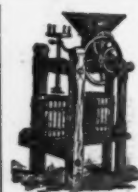
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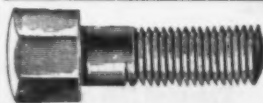


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 Adams Co. .... 67  
 Advance Machine Works. .... 72  
 Affleck, Geo. E. .... 85  
 Aiken, Henry .... 40  
 Ajax Mfg. Co. .... 58  
 Alabama Consolidated Coal & Iron Co. .... 25  
 Albany Foundry Co. .... 87  
 Alexander Bros. .... 49  
 Allentown Rolling Mills. .... 83  
 Allie, E. P. Co. .... 45  
 American Appraisal Co. .... 94  
 American Bicycle Co. .... 90  
 American Blower Co. .... 69  
 American Bridge Co. .... 35  
 American Carbureting Co. .... 34  
 American Gas Furnace Co. .... 64  
 American Emery Wheel Wks. .... 57  
 American Hardware Mfg. Co. .... 96  
 American Iron & Steel Mfg. Co. .... 26  
 American Mfg. Co. .... 64  
 American Metal Co. .... 3  
 American Nickeloid Co. .... 4  
 American Pig Iron Storage Warrant Co. .... 92  
 American Pulley Co. .... 50  
 American Railway Supply Co. .... 94  
 American Screw Co. .... 111  
 American Shearer Mfg. Co. .... 97  
 American Sheet Steel Co. .... 123  
 American Steel Hoop Co. .... 21  
 American Steel Scraper Co. .... 154

American Steel & Wire Co. .... 10  
 American Tin Plate Co. .... 22  
 American Tool Chest Co. .... 108  
 American Tool Works Co. .... 74  
 Amesword Co. .... 49  
 Ansonia Brass & Copper Co. .... 2  
 Arcade File Works. .... 118  
 Arcade Malleable Iron Co. .... 24  
 Arcade Mfg. Co. .... 121  
 Armstrong Bros. Tool Co. .... 64  
 Armstrong Mfg. Co. .... 58  
 Armstrong, R. S. & Bro. .... 89  
 Asher, A. .... 88  
 Ashland Steel Co. .... 24  
 Ashton Valve Co. .... 43  
 Asphalt Ready Rfg. Co. .... 94  
 Athol Machine Co. .... 119  
 Athol Pump Co. .... 114  
 Atkins, E. C. & Co. .... 100  
 Atlas Bolt & Screw Co. .... 44  
 Atlas Mfg. Co. .... 106  
 Autman Co. .... 49  
 Automatic Machine Co. .... 70  
 Avery Stamping Co. .... 95

## B

Babcock & Wilcox Co. .... 46  
 Baeder, Adamson & Co. .... 98  
 Baird, C. R. & Co. .... 25  
 Baird, U. Machinery Co. .... 87  
 Baker, Jas. H. Mfg. Co. .... 36  
 Ball Bearing Co. .... 6  
 Bardsley, Jos. .... 127  
 Barker & Chard Mch. Tool Co. .... 77  
 Barnes, W. F. Co. .... 79  
 Barnes, W. F. & John Co. .... 67  
 Barnes Mfg. Co. .... 114  
 Barnett, G. & H. Co. .... 116  
 Barney & Reed Mfg. Co. .... 123  
 Barnum, E. T. .... 6  
 Barrett, W. L. .... 106  
 Bash Mch. Tool Co. .... 80  
 Bayley, Wm. & Sons Co. .... 72  
 Beaudry & Co. .... 68  
 Becker & Brainerd Milling Mch. Co. .... 78  
 Belden Machine Co. .... 87  
 Bell, Edwin & Sons Co. .... 9  
 Bement, Miles & Co. .... 76  
 Bents & Call Hardware & Tool Co. .... 107  
 Berger Bros. Co. .... 99  
 Best, L. C. & Co. .... 146  
 Bessmer Coke Co. .... 56  
 Bethlehem Fdry. & Mch. Co. .... 88  
 Bethlehem Steel Co. .... 32  
 Blevins Bros. Mfg. Co. .... 129  
 Blackford Drill & Tool Co. .... 66  
 Blacknell Hardware Co. .... 80  
 Bicycle Step Ladder Co. .... 108  
 Bigelow, J. F. .... 153  
 Biggins & Keeler Mfg. Co. .... 68  
 Billings & Spencer Co. .... 130  
 Birdboro Iron & Steel Braking Co. .... 89  
 Bishop, Geo. H. & Co. .... 111  
 Bissell, E. & Co. .... 92  
 Blackman & King. .... 4  
 Blackwell, G. G. Sons & Co. .... 28  
 Blair, Reed F. & Co. .... 29  
 Blake, M. J. & W. .... 89  
 Blake & Johnson. .... 1  
 Bliss Co., F. W. .... 77  
 Bliss, R. Mfg. Co. .... 104  
 Boker, Hermann & Co. .... 28  
 Bole, Rose & Co. .... 82

Bommer Bros. .... 146  
 Booth, The Lloyd Co. .... 82  
 Borgner, Cyrus. .... 35  
 Boston Belting Co. .... 50  
 Boston Blower Co. .... 69  
 Boston Bridge Works. .... 19  
 Boston Gear Works. .... 85  
 Boston & Lockport Block Co. .... 61  
 Botter, C. .... 89  
 Bowler, Geo. H. .... 87  
 Bow, Alfred & Co. .... 54  
 Braddock Mach. & Mfg. Co. .... 14  
 Bradlee & Co. .... 24  
 Bradley Co. .... 78  
 Braeburn Steel Co. .... 81  
 Brammer, H. F. Mfg. Co. .... 124  
 Braunsdorf-Mueller Co. .... 100  
 Bridgeport Brass Co. .... 2  
 Bridgeport Chain Co. .... 138  
 Bridgeport Deoxidized Bronze & Metal Co. .... 2  
 Bridgeport Gun Implement Co. .... 128  
 Bridgeport Mfg. Co. .... 109  
 Bridgeport Safety Emery Wheel Co. .... 56  
 Briggs, Marvin. .... 83  
 Bristol Co. .... 1  
 Broderick & Bascom Rope Co. .... 7  
 Brohard Co. .... 127  
 Brooks, M. S. & Sons. .... 5  
 Brown & Co., Inc. .... 97  
 Brown, E. E. & Co. .... 126  
 Brown Holsting & Conveying Mch. Co. .... 52  
 Brown, R. H. & Co. .... 98  
 Brown & Sharpe Mfg. Co. .... 82  
 Buck Bros. .... 108  
 Buck, Chas. .... 103  
 Buffalo Emery Wheel Co. .... 54  
 Buffalo Forge Co. .... 146  
 Buhl Malleable Co. .... 51  
 Bullard Mch. Tool Co. .... 78  
 Burden Iron Co. .... 132  
 Burditt & Williams. .... 135  
 Burke, P. F. .... 182  
 Burnham, Geo. Co. .... 69  
 Butterfield & Co. .... 63  
 Byram & Co. .... 27

## C

Cabeen & Co. .... 81  
 Cahall Sales Dept. .... 186  
 Caldwell Mfg. Co. .... 98  
 California Wire Works. .... 52  
 Canfield, H. O. .... 136  
 Capewell Horse Nail Co. .... 1  
 Carborundum Co. .... 57  
 Card, S. W. Mfg. Co. .... 62  
 Carlin's Sons, Thomas Co. .... 82  
 Carter & Hakes Machine Co. .... 45  
 Cary Mfg. Co. .... 97  
 Cary Spring Works. .... 5  
 Cattaraugus Cutlery Co. .... 108  
 Central Hardware Co. .... 106  
 Chambers Bros. Co. .... 17  
 Champion Blower & Forge Co. .... 67  
 Champion Iron & Steel Co. .... 26  
 Chandler & Farquhar. .... 113  
 Chapman, J. B. & Co. .... 54  
 Chapman Valve Mfg. Co. .... 43  
 Charter Gas Engine Co. .... 41  
 Chatillon, John & Sons. .... 4  
 Cheney, S. & Son. .... 35  
 Cherry Valley Iron Co. .... 25  
 Chesley Machinery Co. .... 86  
 Chester Steel Casting Co. .... 51  
 Chicago Drop Forge & Fdy. Co. .... 36  
 Chicago Flexible Shaft Co. .... 64  
 Chicago House Wrecking Co. .... 91  
 Chicago, Milwaukee & St. Paul Ry. .... 54  
 Chicago Pneumatic Tool Co. .... 79  
 Chicago Scale Co. .... 138  
 Chicago Screw Co. .... 15  
 Chicago Spring Butt Co. .... 133  
 Chicago Time Register Co. .... 105  
 Chubbott-Evans Chain Co. .... 9  
 Chisholm & Moore Mfg. Co. .... 146  
 Chrome Steel Works. .... 81  
 Church, Isaac. .... 18  
 Church, S. K. .... 58  
 Cincinnati Mach. Tool Co. .... 79  
 Cincinnati Milling Mch. Co. .... 73  
 Cincinnati Planer Co. .... 78  
 Clapp, E. D. Mfg. Co. .... 128  
 Clark, John W. .... 4  
 Clark & Cowles. .... 4  
 Clark & Parsons Co. .... 145  
 Clark, Quilen & Morse. .... 121  
 Clark, W. J. Co. .... 49  
 Clay Stamping Co. .... 47  
 Clayton Air Compressor Wks. .... 47  
 Cleveland Ball & Screw Co. .... 69  
 Cleveland City Forge & Iron Co. .... 3  
 Cleveland Crane & Car Co. .... 53  
 Cleveland Elevator Bucket Co. .... 49  
 Cleveland Stamping & Tool Co. .... 98  
 Cleveland Stone Co. .... 47  
 Cleveland Twist Drill Co. .... 52  
 Clinton Wire Cloth Co. .... 12  
 Cobb & Drew. .... 16

Coburn Trolley Track Mfg. Co. .... 125  
 Cooling Mfg. Co. .... 84  
 Coes Wrench Co. .... 120  
 Coldwell Lawn Mower Co. .... 134  
 Coleman Hardware Co. .... 125  
 Conn. Valley Mfg. Co. .... 99  
 Consolidated Iron & Steel Co. .... 23  
 Consolidated Rail'y Electric Lighting & Equipment Co. .... 37  
 Continental Tool Co. .... 132  
 Cook, A. D. .... 47  
 Cook, Asa S. & Co. .... 70  
 Cook, H. C. & Co. .... 102  
 Cornell, J. B. & J. M. .... 77  
 Cotton, Barclay W. & Co. .... 52  
 Covert Mfg. Co. .... 135  
 Covert's Saddlery Works. .... 97  
 Cox, Justice, Jr. & Co., Ltd. .... 80  
 Cramp, Wm. & Sons S. & E. B. Co. .... 3  
 Crane, W. M. Co. .... 33  
 Crescent Brass & Iron Co. .... 99  
 Crescent Phosphorized Metal Co. .... 8  
 Crescent Mfg. Co. .... 18  
 Crescent Steel Co. .... 29  
 Cresson, Geo. V. Co. .... 43  
 Cronk Hanger Co. .... 117  
 Crosby Steam Gage & Valve Co. .... 46  
 Cross & Speirs Machine Co. .... 80  
 Cunliffe, R. M. .... 89  
 Curtis & Curtis. .... 62  
 Cushman Chuck Co. .... 60

## D

Dallett, Thos. H. & Co. .... 75  
 Dame, Stoddard & Co. .... 129  
 Danielson Mch. & Tool Co. .... 85  
 D'Amour & Littledale Mch. Co. .... 66  
 Darby, Edw. & Sons. .... 12  
 Dart, E. M. Mfg. Co. .... 43  
 Davis, W. P. Machine Co. .... 88  
 Davis & Buxton Stamping Co. .... 129  
 Davol, John & Sons. .... 2  
 Dawson, A. L. & Co. .... 86  
 Deane Mch. Wks. .... 64  
 DeKalb Fence Co. .... 11  
 Deming Co. .... 114  
 Denman & Davis. .... 26  
 Detrick & Harvey Machine Co. .... 66  
 Diamond Drill & Mch. Co. .... 33  
 Diamond Machine Co. .... 57  
 Diamond Tack & Nail Wks. .... 19  
 Dickinson, T. L. .... 35  
 Diebolt & Eisenhardt. .... 65  
 Dillon-Grissold Wire Co. .... 11  
 Dimmick, J. K. & Co. .... 82  
 Diaston, Henry & Son. .... 161  
 Divine Bros. .... 54  
 Dixon, Jos. Crucible Co. .... 49  
 Doan, J. B. & Co. .... 85  
 Dodge Machine Screw Co. .... 102  
 Dodge Mfg. Co. .... 51  
 Doebler Mfg. Co. .... 63  
 Donaldson & Newton. .... 89  
 Draper Machine Tool Co. .... 79  
 Drouve, G. Co. .... 129  
 Dudgeon, Richard. .... 65  
 Duff Patents Co. .... 40  
 Dunbar Bros. .... 6  
 Dunham Nut Co. .... 17  
 Dupont Mfg. Co. .... 78  
 Durant, W. N. .... 45  
 Dwiggins Wire Fence Co. .... 8

## E

Eagle Anvil Works. .... 107  
 Eastern Bridge & Structural Co. .... 19  
 Eastern Forge Co. .... 34  
 Eastern Machinery Co. .... 50  
 Eccles, Richard. .... 133  
 Eclipse Bicycle Co. .... 128  
 Eckstein, C. G. .... 54  
 Eddy Electric Mfg. Co. .... 42  
 Edison Mfg. Co. .... 114  
 Elmer & Amend. .... 88  
 Electric Controller & Supply Co. .... 47  
 Ellis & Halphenberger. .... 9  
 Empire Pipe Bending & Supply Co. .... 4  
 Energy Elevator Co. .... 116  
 Ensign, Blackford & Co. .... 109  
 Enterprise Mfg. Co. .... 123  
 Erie Specialty Co. .... 108  
 Erikson, Edw. E. .... 40  
 Estey Wire Works Co. .... 7  
 Etting, Edw. J. .... 32  
 Eucker, L. A. Stamp Wks. .... 118  
 Evans, S. F. .... 48  
 Everson, B. M. .... 88  
 Excelsior Needle Co. .... 146  
 Exeter Machine Works. .... 69

## F

Fairbanks Co. .... 61  
 Fairmount Machine Co. .... 48  
 Farrel Foundry & Mch. Co. .... 31  
 Fay, J. A. & Egan Co. .... 64  
 Ferracute Mach. Co. .... 68  
 Ferro Carbon Casting Co. .... 33  
 Field, C. H. .... 64  
 Filler & Stowell Co. .... 45  
 Finished Steel Co. .... 23  
 Fieh, H. C. Machine Works. .... 77  
 Fitch, W. & E. T. Co. The. .... 145  
 Flagg, Stanley G. & Co. .... 146  
 Flint & Walling Mfg. Co. .... 114  
 Folding Paper Box Co. .... 120  
 Ford Bit Co. .... 103  
 Forest City Foundry & Mfg. Co. .... 119  
 Forest City Steel & Iron Co. .... 89  
 Forster Pulley Works. .... 48  
 Fox Machine Co. .... 127  
 Frankford Steel Co. .... 36  
 Frank-Kneeland Mach. Co. .... 33  
 Franklin, H. H. Mfg. Co. .... 94  
 Frick, H. C. Coke Co. .... 96  
 Frost Wire Fence Co. .... 8  
 Fulton Iron & Engine Works. .... 51

## G

Gardner Bros. .... 35  
 Garland Chain Co. .... 104  
 Garrison, A., Foundry Co. .... 83  
 Garry Iron & Steel Roofing Co. .... 9  
 Garvin Machine Co. .... 70  
 Gem Mfg. Co. .... 97  
 General Electric Co. .... 42  
 General Supply Co. .... 59  
 Geometric Drill Co. .... 61  
 Gerlach, Peter & Co. .... 60  
 Gilbert & Bennett Mfg. Co. .... 12  
 Gilmour, J. .... 41  
 Gleason-Peters Air Pump Co. .... 129  
 Gleason Tool Co. .... 146  
 Goepel & Raegener. .... 7  
 Goodell Co. .... 104  
 Goodell-Pratt Co. .... 107  
 Goodwin & Kintz Co. .... 95  
 Gould & Eberhardt. .... 66  
 Graham, John H. & Co. .... 113  
 Grand Crossing Tack Co. .... 16  
 Grand Rapids Hardware Co. .... 127  
 Gray, Robt. J. .... 88  
 Green, A. H. .... 109  
 Greiner, F. .... 89  
 Griffin Mfg. Co. .... 103  
 Griswold Wire Co. .... 5  
 Gunn & Hannah. .... 99

## H

Hagen & Reid. .... 102  
 Haines Gauge Co. .... 39  
 Hale Bros. .... 102  
 Halk & Naumann. .... 3  
 Hall, Thomas. .... 113  
 Hall's, Samuel, Sons. .... 14  
 Hamlin, Geo. R. .... 7  
 Hammer & Co. .... 120  
 Hannan & Finton. .... 87  
 Harrington, K. Son & Co. .... 52  
 Harrington & King Perforating Co. .... 5  
 Harrington & Richardson Arms Co. .... 128  
 Harris, Samuel & Co. .... 88  
 Harris Machinery Co. .... 68  
 Harrison Safety Boiler Wks. .... 46  
 Hartford Steam Boiler Insp. and Ins. Co. .... 41  
 Hartigan, W. R. .... 100  
 Hartman Mfg. Co. .... 9  
 Harvey, Arthur C. Co. .... 37  
 Haskell, Wm. H. Mfg. Co. .... 18  
 Haws, W. H. Fire Brick Co. .... 35  
 Hay, Budden Mfg. Co. .... 119  
 Hazard Mfg. Co. .... 7  
 Heald, L. S. & Son. .... 88  
 Heat Transmission Co. .... 41  
 Heinsch's, R. Sons. .... 103  
 Heller Bros. Co. .... 119  
 Heller Box Co. .... 109  
 Henderson's, A. L. Sons. .... 65  
 Henderson Bros. .... 34  
 Hendey Machine Co. .... 95  
 Hendricks Bros. .... 2  
 Hendryx, A. B. Co. .... 8  
 Hess, Snyder & Co. .... 58  
 Heyl & Patterson. .... 36

## I

Hiatt, W. H. .... 29  
 Hickman, Williams & Co. .... 70  
 Hiertz, T. & Son. .... 3  
 Hiles, C. A. & Co. .... 129  
 Hil, Henry F. .... 83  
 Hill, N. N. Brass Co. .... 129  
 Hill, Clarke & Co. .... 71  
 Hill Dryer Co. .... 145  
 Hilles & Jones Co. .... 68  
 Hillman, J. H. & Son. .... 86  
 Hitner, H. A. Sons. .... 38  
 Hobson, Houghton & Co. .... 23  
 Hoefler Mfg. Co. .... 67  
 Hofeller, Theo. & Co. .... 97  
 Hoffman, Geo. W. .... 109  
 Hoggson & Pettit Mfg. Co. .... 60  
 Hollands Mfg. Co. .... 116  
 Hollinger Fence Co. .... 5  
 Hoover & Gamble Co. .... 9  
 Horsburgh & Scott. .... 59  
 Horton, E. & Son Co. .... 60  
 Hough Cash Recorder Co. .... 105  
 Houghton & Buxton Mfg. Co. .... 95  
 Houston, C. B. & Co. .... 30  
 Howard Iron Works. .... 118  
 Howard & Morse. .... 7  
 Howson & Howson. .... 7  
 Hubbell, Harvey. .... 14  
 Huber, S. V. & Co. .... 40  
 Hudson Parer Co. .... 121  
 Hull & Hoyt Co. .... 100  
 Humphreys Mfg. Co. .... 114  
 Hungerford, U. T. Brass & Copper Co. .... 3  
 Hunt, C. W. Co. .... 48  
 Hurlbut Rogers Mach. Co. .... 63

## J

Ideal Machine Works. .... 59  
 Ideal Mfg. Co. .... 128  
 Illinois Malleable Iron Co. .... 87  
 Illinois Screw Co. .... 136  
 Illinois Steel Co. .... 89  
 Illinois Zinc Co. .... 3  
 Imperial Bit & Snap Co. .... 135  
 Indianapolis Drop Forging Co. .... 37  
 Ingersoll-Sergeant Drill Co. .... 47  
 International Silver Co. .... 105  
 Iowa Farming Tool Co. .... 135  
 Ironides Co. .... 4  
 Isaac Joseph Iron Co. .... 89  
 Ives, H. B. & Co. .... 97  
 Ivins, Ellwood. .... 25

## K

Jackson Fine Scraper Co. .... 46  
 Janney, Steinmetz & Co. .... 7  
 Jarecki Mfg. Co. .... 64  
 Jefferson Iron Co. .... 90  
 Jeffrey Mfg. Co. .... 48  
 Jenckes, E. Mfg. Co. .... 5  
 Jenkins Bros. .... 1  
 Jenkins Iron & Tool Co. .... 136  
 Jenkinson, R. C. & Co. .... 6  
 Jennings, C. E. & Co. .... 102  
 Jennings, Russell Mfg. Co. .... 108  
 Jessop, Wm. & Sons. .... 28  
 Johnson, I. H., Jr., & Co. .... 66  
 Johnson, Iver, Arms & Cycle Works. .... 145  
 Johnson, Wm. C. & Sons Mch. Co. .... 87  
 Jones, B. M. & Co. .... 30  
 Jones, Jesse Paper Box Co. .... 109  
 Jones & Dommerman. .... 106  
 Jones & Lamson Machine Co. .... 96  
 Jones & Laughlins, Ltd. .... 33

## L

Kay, G. Ashton. .... 39  
 Keagy & Lear Machine Co. .... 70  
 Keeley, Jerome & Co. .... 30  
 Keen & Hagerty Mfg. Co. .... 122  
 Kelley, B. F. & Son. .... 86  
 Kennedy, Julian. .... 38  
 Kennedy, Walter. .... 40  
 Kennedy Valve Mfg. Co. .... 146  
 Kerrick, J. H. .... 84  
 Keystone Drop Forge Works. .... 54  
 Keystone Mfg. Co. .... 113  
 Kidd Bros. & Burgher Steel Wire Co. .... 6  
 Kidder, R. E. .... 67  
 Kilbourn & Bishop Co. .... 84  
 Kilbourne & Jacobs Mfg. Co. .... 136  
 Kilmer Wire Mfg. Co. .... 11  
 Kimball, C. J. Co. .... 103  
 Kimball Bros. & Sprague. .... 19  
 King, J. M. & Co. .... 116  
 Kokomo Fence Mach. Co. .... 8  
 Konigslow, E. & Bro. .... 93  
 Kupferle, Jno. C. .... 93

## M

La Belle Steel Co. .... 29  
 Ladd, W. C. .... 101  
 Lake City Engineering Co. .... 41  
 Lamond, David. .... 40  
 Landis Tool Co. .... 56  
 Lane Brothers Co. .... 127  
 Lang Cutlery Works. .... 102  
 Lansing Wheelbarrow Co. .... 34

## N

N. N. Brass Co. .... 129



|                                                |                                                  |                                                  |                                             |                                                |
|------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------|------------------------------------------------|
| Laughlin, Alex. & Co. .... 40                  | N                                                | Pittsburgh Screw & Bolt Co. .... 16              | Silver Lake Co. .... 127                    | U. S. Steel Lock Co. .... 126                  |
| Law, Ernest & Co. .... 31                      | Narragansett Mch. Co. .... 128                   | Pittsburgh Shear, Knife & Machine Co. .... 26    | Silver Mfg. Co. .... 66                     | Universal Machine Co. .... 58                  |
| Lawrence Bros. .... 126                        | Nash, Geo. & Co. .... 80                         | Pittsburg Steel Shafting Co. .... 28             | Simonds Mfg. Co. .... 109                   | Up-to-date Mfg. Co. .... 9                     |
| Lea, J. Tatnall & Co. .... 80                  | National Abrasive Mfg. Co. .... 56               | Plunger & Henger Mfg. Co. .... 186               | Simplex Time Recorder Co. .... 108          | Utica Drop Forge & Tool Co. .... 120           |
| LeCount, Wm. G. .... 118                       | National Cutlery Co. .... 102                    | Plume & Atwood Mfg. Co. .... 3                   | Singer, Nimble & Co. .... 29                | V                                              |
| Lefter, Chas. & Co. .... 66                    | National Elastic Nut Co. .... 14                 | Plymouth Mills. .... 14                          | Skinner Chuck Works. .... 68                | Valentine, M. D. & Bro. .... 35                |
| Lenz's, Jno. S., Son & Co. .... 146            | National Horse Nail Co. .... 132                 | Pneumatic Crane Co. .... 62                      | Slate, Dwight Mch. Co. .... 66              | Van Dorn Iron Works Co. .... 108               |
| Leonard, John & Co. .... 89                    | National Machinery Co. .... 60                   | Poinier & Lester. .... 89                        | Slocumb, J. T. & Co. .... 118               | Van Wagoner & Williams Hardware Co. .... 146   |
| Leonhardt & Co. .... 132                       | National Pancoast Ventilator Co. .... 99         | Pollock, W. B. Co. .... 44                       | Sloss Sheffield Steel & Iron Co. .... 23    | Variety Machine Co. .... 54                    |
| Leschen, A. & Sons Rope Co. .... 7             | National Pipe Bending Co. .... 48                | Pond Machine Tool Co. .... 76                    | Smith & Caffrey. .... 38                    | Velox Machine Works. .... 106                  |
| Levia, Henry & Co. .... 32                     | National Saw Co. .... 100                        | Port Chester Bolt & Nut Co. .... 19              | Smith & Egge Mfg. Co. .... 108              | Virginia Iron, Coal & Coke Co. .... 25         |
| Lewis Tool Co. .... 116                        | National Sewing Machine Co. .... 112             | Potter & Johnston Co. .... 78                    | Smith & Hemenway Co. .... 120               | Vitrified Emery Wheel Co. .... 56              |
| Lidgerwood Mfg. Co. .... 146                   | National Specialty Mfg. Co. .... 124             | Potts, Horace T. & Co. .... 50                   | Smith, M. B. Co. .... 89                    | Vulcan Iron Works. .... 47                     |
| Lillenberg, N. .... 29                         | National Steel Co. .... 27                       | Poulter & Co. .... 83                            | Smooth On Mfg. Co. .... 71                  | Vulcanus Forging Co. .... 58                   |
| Lima Steel Castings Co. .... 31                | National Tube Co. .... 21                        | Pratt Chuck Co. .... 61                          | Smythe, S. R. Co., Inc. .... 40             | W                                              |
| Lindsay, W. W. & Co. .... 24                   | National Wire Corp. .... 13                      | Pratt & Whitney Co. .... 75                      | Snell Mfg. Co. .... 106                     | Waggoner Watchman Clock Co. .... 5             |
| Link-belt Engineering Co. .... 52              | Naugatuck Mfg. Co. .... 46                       | Prentice Bros. Co. .... 81                       | Snow, L. T. .... 145                        | Wallace, Wm. H. & Co. .... 2                   |
| Livermore, Homer F. .... 84 & 86               | Nazel & Bassett. .... 54                         | Prentiss, Geo. W. & Co. .... 8                   | Snow Flake Axle Grease Co. .... 108         | Wardlaw, S. & C. .... 28                       |
| Lloyd Mfg. Co. .... 124                        | Ness, Geo. M., Jr. .... 116                      | Prentiss Tool & Supply Co. .... 85               | Snyder, W. P. & Co. .... 23                 | Ward, Edgar T. & Sons. .... 28                 |
| Lockhart Iron & Steel Co. .... 28              | New Albany Mfg. Co. .... 36                      | Prentiss Vise Co. .... 116                       | Sommer's Son, John. .... 148                | Warner Bros. Co. .... 5                        |
| Lodge & Shipley Mch. Tool Co. .... 83          | New Brunswick Fdry. Co. .... 36                  | Prebrey Fire Brick Co. .... 85                   | Southern Railway Co. .... 85                | Warren City Boiler Works. .... 44              |
| Logan Iron & Steel Co. .... 60                 | New Century Mfg. Co. .... 99                     | Pugh, Job T. .... 108                            | Southwark Fdry. & Mch. Co. .... 45          | Warren, J. D. Mfg. Co. .... 121                |
| Logan & Strobbridge Iron Co. .... 102          | New Doty Mfg. Co. .... 72                        | Pullman, J. Wesley. .... 80                      | Spencer, I. S. Sons. .... 35                | Washington Coal & Coke Co. .... 2              |
| Lombart Iron Works & Supply Co. .... 86        | New England Steel Casting Co. .... 61            | Pullman Sash Balance Co. .... 127                | Spencer Automatic Mch. Screw Co. .... 146   | Waterbury Brass Co. .... 1                     |
| Lorain Foundry Co. .... 32                     | New England Structural Co. .... 19               | Putnam Nail Co. .... 138                         | Spencer Wire Co. .... 13                    | Waterbury Farrel Foundry & Machine Co. .... 15 |
| Lorain Steel Co. .... 29                       | New Freedom Wire Cloth Co. .... 18               | Q                                                | Spofford, W. S. & Son. .... 35              | Waterbury Rope Co. .... 6                      |
| Louden Mch. Co. .... 136                       | Newhall, Henry B. .... 19                        | Quint, A. D. .... 80                             | Springfield Drop Forging Co. .... 129       | Watson, E. P. .... 44                          |
| Loyd, John. .... 100                           | New Haven Mfg. Co. .... 68                       | R                                                | Springfield Mch. Screw Co. .... 117         | Watson, N. A. .... 4                           |
| Ludlow-Saylor Wire Co. .... 8                  | New Haven Wire Mfg. Co. .... 5                   | Ramapo Car Wheel Co. .... 87                     | Springfield Mfg. Co. .... 56                | Watson-Stillman Co. .... 8                     |
| Lurkin Rule Co. .... 107                       | N. J. Iron & Metal Co. .... 89                   | Rand Drill Co. .... 46                           | Standard Chain Co. .... 107                 | Wayne, Anthony Mfg. Co. .... 121               |
| Lukens Iron & Steel Co. .... 27                | N. J. Wire Cloth Co. .... 12                     | Randolph-Crowe Co. .... 2                        | Standard Co. .... 190                       | Weber Gas & Gasoline Engine Co. .... 136       |
| Lund, S. T. .... 84                            | Newkirk, J. B. & Co. .... 30                     | Randolph Iron Co. .... 34                        | Standard Fdry. & Mfg. Co. .... 35           | Webster, Warren & Co. .... 41                  |
| Lyon, N. .... 139                              | Newport News Shipbuilding & Dry Dock Co. .... 45 | Rawson Electric Co. .... 138                     | Standard Scale & Supply Co. .... 69         | Welch, T. F. Mfg. Co. .... 1                   |
| M                                              | New Process Twist Drill Co. .... 59              | Read, A. P. & Co. .... 125                       | Standard Tool Co. .... 58                   | Wellman Seaver Engineering Co. .... 40         |
| McCabe, J. J. .... 73 & 83                     | N. Y. Air Compressor Co. .... 47                 | Reade, Wm. A. & Co. .... 57                      | Standard Varnish Works. .... 112            | Wells Bros. & Co. .... 62                      |
| McCabe Hanger Mfg. Co. .... 19 & 126           | N. Y. Blower Co. .... 69                         | Reading Crane & Hoist Works. .... 53             | Stanley Rule & Level Co. .... 106           | Westinghouse Electric & Mfg. Co. .... 42       |
| McCaffrey File Co. .... 118                    | N. Y. Machinery Depot. .... 83                   | Reading Hardware Co. .... 99                     | Stanley Works. .... 126                     | West Side Foundry Co. .... 3                   |
| McClure, G. W., Son & Co. .... 40              | N. Y. Stamping Co. .... 106                      | Reading Screw Co. .... 6                         | Star Corundum Wheel Co. .... 54             | Wetherill, Robt. & Co. .... 16                 |
| McCoy, Jos. F. .... 53                         | Ney Mfg. Co. .... 138                            | Reed Jacket Mfg. Co. .... 114                    | Star Mfg. Co. .... 118                      | Wheeler, Mifflin & Co. .... 15                 |
| McCullough Iron Co. .... 23                    | Niagara Machine & Tool Works. .... 71            | Reece, E. F. Co. .... 64                         | Star Mfg. Co. .... 91                       | Wheeling Hinge Co. .... 15                     |
| McDowell, Stocker & Co. .... 84                | Niagara Screw Co. .... 14                        | Reed & Curtis Mch. Screw Co. .... 73             | Starr Bros. Bell Co. .... 129               | Wheeling Mold & Fdry. Co. .... 15              |
| McFarland, Wm. .... 6                          | Nicholson & Co. .... 94                          | Rees, Paul S. .... 146                           | Starrett, L. S. Co. .... 117                | Wheelock, Lovejoy & Co. .... 28                |
| McGowan, J. H. & Co. .... 47                   | Nicholson, W. H. & Co. .... 61                   | Remington Arms Co. .... 128                      | Staten Island Clay Co. .... 35              | Whitcomb Mfg. Co. .... 46                      |
| McIntee, C. E. .... 27                         | Nicholson File Co. .... 119                      | Republic Iron & Steel Co. .... 1 & 145           | Steel Rail Supply Co. .... 59               | White, L. & I. J. Co. .... 101                 |
| McKay, Jas. & Co. .... 30                      | Nicol & Co. .... 102                             | R. I. Perkins Horse Shoe Co. .... 132            | Sterling Emery Wheel Mfg. Co. .... 89       | White Mt. Freezer Co. .... 111                 |
| McKinney Mfg. Co. .... 133                     | Nicoll, B. & Co. .... 91                         | Rhode Island Tool Co. .... 17                    | Stevens, J. Arms & Tool Co. .... 90         | Whitehurst, K. W. & Co. .... 136               |
| McKinnon Dash Co. .... 130                     | Niles Tool Works Co. .... 76 & 84                | Richard Mfg. Co. .... 48                         | Steward D. M. Mfg. Co. .... 104             | Whiting Mfg. Co. .... 135                      |
| McNab & Harlin Mfg. Co. .... 44                | Nilson, A. H. Mch. Co. .... 75                   | Richmond Cedar Works. .... 124                   | Steward & Romaine Mfg. Co. .... 10          | Whitlock Coil Pipe Co. .... 41                 |
| Magnolia Metal Co. .... 1                      | North American Metalline Co. .... 8              | Ridgway, Craig & Son Co. .... 51                 | Stewart Iron Works. .... 9                  | Whitton, D. E. Mch. Co. .... 60                |
| Main Belting Co. .... 49                       | North Bros. Mfg. Co. .... 98                     | Ripley & Bartlett. .... 18                       | Stewart Wire Co. .... 7                     | Wickwire Bros. .... 12                         |
| Maine Mfg. Co. .... 129                        | Northampton Emery Wheel Co. .... 55              | Ritter-Conley Mfg. Co. .... 19                   | Stocking, E. B. .... 7                      | Wiebusch & Hilger, Ltd. .... 13                |
| Manning, Maxwell & Moore. .... 85              | Norton Emery Wheel Co. .... 35                   | Rockford Bolt Works. .... 17                     | Stokes Bros. Mfg. Co. .... 118              | Wilbraham-Baker Blower Co. .... 7              |
| Manogue-Pidgeon Iron Co. .... 83               | Norton Mfg. Co. .... 106                         | Rockwell Engineering Co. .... 40                 | Storm Mfg. Co. .... 136                     | Wilcox Mfg. Co. .... 125                       |
| Manville Machine Co., E. J. .... 82            | Norwalk Iron Works Co. .... 47                   | Rogers, M. H. .... 89                            | Stoutenburg Mfg. Co. .... 112               | Wilder, S. & Co. .... 13                       |
| Markham Air Rifle Co. .... 123                 | Norwalk Pattern & Mfg. Co. .... 23               | Rogers, Jno. M. Boat, Gauge & Drill Wks. .... 72 | Stow Flexible Shaft Co. .... 60             | Wiley & Russell Mfg. Co. .... 64 & 104         |
| Markle Lead Works. .... 95                     | Nut & Washer Mfg. Co. .... 14                    | Rossiter, McGovern & Co. .... 84                 | Stow Mfg. Co. .... 60                       | Williams, A. C. .... 124                       |
| Marlin Fire Arms Co. .... 128                  | Nuttall, R. D. Co. .... 74                       | Rossman Woven Wire Fence Co. .... 8              | Stowell Mfg. & Fdry. Co. .... 125           | Williams, J. H. & Co. .... 60                  |
| Marshall & Huchart Mch. Co. .... 86            | O                                                | Rutter, A. T. .... 71                            | Streeter, N. B. & Co. .... 122              | Williams, White & Co. .... 71                  |
| Mason & Parker. .... 103                       | Obermayer, S. Co. .... 83                        | Ryan, J. J. & Co. .... 2                         | Strieby & Foote Co. .... 131                | Williamsport Wire Rope Co. .... 7              |
| Mason Regulator Co. .... 45                    | Oefinger, J. L. .... 127                         | Sabin Machine Co. .... 5                         | Sturtevant, B. F. Co. .... 81               | Wilson Aluminum Co. .... 20                    |
| Matthiessen & Hegeler Zinc Co. .... 2          | Ogden & Wallace. .... 29                         | Safety Emery Wheel Co. .... 56                   | Summit Wire Co. .... 9                      | Wilmart & Morman. .... 51                      |
| Maurer, H. & Son. .... 35                      | Oneda Community. .... 104                        | Saginaw Mfg. Co. .... 48                         | Superior Charcoal Iron Co. .... 29          | Wilmet & Hobbs Mfg. Co. .... 123               |
| May & Spalding. .... 60                        | Ormsby, E. A. .... 9                             | St. John Spring Co. .... 9                       | Supple Hardware Co. .... 102                | Wilson, E. H. & Co. .... 127                   |
| Mayhew, H. H. Co. .... 120                     | Ornamental Iron & Wire Co. .... 9                | St. Joseph Pump & Mfg. Co. .... 124              | Sweetzer, W. A. .... 40                     | Wilson, E. H. & H. F. .... 7                   |
| Maywood Fdry. & Mch. Co. .... 89               | Osborn Mfg. Co. .... 105                         | St. Louis Electrotype Foundry. .... 95           | Swindell, W. & Bros. .... 40                | Wilson & Smith. .... 19                        |
| Merchant & Co. .... 8                          | Osawanna Mills Co. .... 145                      | St. Louis Shovel Co. .... 135                    | Syracuse Chilled Plow Co. .... 135          | Wilson, W. A. .... 80                          |
| Merchants & Manufacturers Ass'n. .... 98 & 97  | Ostrander Fire Brick Co. .... 85                 | Samson Cordage Works. .... 1                     | T                                           | Windsor Machine Co. .... 74                    |
| Merrell Mfg. Co. .... 65                       | Ostrander, W. R. & Co. .... 109                  | Samuel, Frank. .... 27                           | Tabor Mfg. Co. .... 45                      | Winter Bros. .... 62                           |
| Merrill Bros. .... 1                           | Otis Steel Co. .... 81                           | Samuel, M. & Sons. .... 89                       | Taintor Mfg. Co. .... 116                   | Wire Goods Co. .... 7                          |
| Mersick C. S. & Co. .... 65                    | P                                                | Saunders' Sons, D. .... 68                       | Talcott, W. O. .... 51                      | Wister, Francis. .... 30                       |
| Mesta Machine Co. .... 82                      | Palmer, I. E. .... 131                           | Sawyer Tool Co. .... 98                          | Tanite Co. .... 166                         | Wister, L. & R. Co. .... 30 & 82               |
| Mianus Electric Co. .... 136                   | Palmer Hardware Mfg. Co. .... 127                | Scaife, Wm. B. & Sons. .... 19                   | Taunton Locomotive Mfg. Co. .... 48         | Withington & Cooley Mfg. Co. .... 128          |
| Michigan College of Mines. .... 94             | Paradox Machinery Co. .... 85                    | Scheeler's Sons. .... 5                          | Taylor's Chas. Sons Co. .... 35             | Wolf, R. H. & Co., Ltd. .... 6                 |
| Michigan Wire Cloth Co. .... 13                | Pardee, C. Works. .... 25                        | Schneider & Trenkamp Co. .... 123                | Tennessee Coal, Iron & R. R. Co. .... 21    | Wolfarm Works. .... 5                          |
| Mietz, Aug. .... 44                            | Parker, Chas. Co. .... 123                       | Schrayers, M. Sons & Co. .... 103                | Thaw Auto. Shovel Co. .... 53               | Wood, Alan & Co. .... 80                       |
| Milbradt, G. A. & Co. .... 109                 | Passaic Rolling Mill Co. .... 27                 | Schwerdtle & Siebert. .... 116                   | Thomas & Lowe Machinery Co. .... 87         | Wood, Jno. Mfg. Co. .... 64                    |
| Miles, F. S. .... 17                           | Patch, F. B. Mfg. Co. .... 66                    | Scott, Chas. Spring Co. .... 8                   | Thomas, W. H. & Co. .... 30                 | Wood, R. D. & Co. .... 41                      |
| Miles, E. O. & Co. .... 89                     | Patterson, F. L. .... 84                         | Scott, Geo. M. .... 36                           | Thomson Bros. & Co. .... 104                | Wood, Wm. T. & Co. .... 104                    |
| Miller, C. & Son Co. .... 146                  | Pawling & Harnischfeger. .... 53                 | Scovill Mfg. Co. .... 2                          | Thurston Mfg. Co. .... 67                   | Woodman, R. Mfg. & Sup. Co. .... 12            |
| Miller, Edward & Co. .... 180                  | Paxson, J. W. Co. .... 51                        | Scranton Bolt & Nut Co. .... 14                  | Tidewater Steel Co. .... 24                 | Woodruff, O. D. .... 121                       |
| Miller, H. J. .... 16                          | Peck, Stow & Wilcox Co. .... 121                 | Scranton Furling Co. .... 132                    | Tiebout, W. & J. .... 109                   | Woodruff, Walter W. & Sons. .... 120           |
| Miller & Van Winkle. .... 146                  | Pedrick & Ayer Co. .... 11                       | Scranton & Co., The. .... 68                     | Titchener, E. H. & Co. .... 16              | Woods, T. B. Sons. .... 60                     |
| Miller Engineering Co. .... 40                 | Peelless Rubber Mfg. Co. .... 50                 | Seaman, D. C. & Co. .... 14                      | Titusville Forge Co. .... 89                | Woods, T. B. Sons. .... 60                     |
| Millers Falls Co. .... 98 & 143                | Pelouze Scale & Mfg. Co. .... 136                | Seaman, Sleeth Co. .... 83                       | Tod, Wm. & Co. .... 45                      | Woolley Fdry. & Mch. Wks. .... 40              |
| Millet Core Oven Co. .... 109                  | Pennsylvania Engineering Wks. .... 33            | Seaver Mfg. Co. .... 112                         | Toomey, Frank. .... 88                      | Worcester Mch. Screw Co. .... 15               |
| Milne, A. & Co. .... 30                        | Pennsylvania Machinery Co. .... 84               | Seidel & Hastings Co. .... 27                    | Totten & Hogg Iron & Steel Fdy. Co. .... 83 | Worner, C. C. Mch. Co. .... 15                 |
| Milton Mfg. Co. .... 17                        | Perkins, B. F. & Son. .... 69                    | Sellers, Wm. & Co. .... 53                       | Townsend, C. C. & E. P. .... 17             | Wright & Colton Wire Cloth Co. .... 12         |
| Miltonauke Pack Co. .... 16                    | Perkins Machine Co. .... 77                      | Seneca Falls Mfg. Co. .... 71                    | Transue & Williams Co. .... 103             | Wrightville Hdw. Co. .... 136                  |
| Miner & Peck Mfg. Co. .... 68                  | Peters Cartridge Co. .... 181                    | Sennett, Geo. B. Co. .... 45                     | Trenton Iron Co. .... 4                     | Wurster, F. W. & Co. .... 136                  |
| Mitchell, W. B. .... 106                       | Phenix Tube Co. .... 36                          | Seward, M. & Son Co. .... 132                    | Treshway, Sam'l & Co., Ltd. .... 29         | Wyman & Gordon. .... 117                       |
| Mohr, J. J. .... 30                            | Phenix Machine Screw Works. .... 132             | Seyfert's Sons, L. F. .... 88                    | Trimont Mfg. Co. .... 116                   | Y                                              |
| Monroe, S. G. .... 104                         | Phenix Machine Tool Co. .... 70                  | Sheffield Car Co. .... 106                       | Turner, Vaughn & Taylor Co. .... 11         | York, S. M. Co. .... 80                        |
| Montgomery, R. E. & Co. .... 121               | Phila. Pneumatic Tool Co. .... 33                | Shelby Steel Tube Co. .... 97                    | Tyler, W. S. Co. .... 96                    | York Mfg. Co. .... 80                          |
| Mooney, A. M. & Co. .... 121                   | Phillips' F. R. & Sons Co. .... 84 & 89          | Shenton Co. .... 16                              | U                                           | Young, W. C. Mfg. Co. .... 14                  |
| Moore, C. P. .... 109                          | Phillips, E. & Sons. .... 18                     | Shimer, H. M. & Co. .... 5                       | Uehling, Steinbart & Co., Ltd. .... 33      | Youngstown Fdy. & Mch. Co. .... 34             |
| Moore, Franklin Co. .... 16                    | Phenix Horseshoe Co. .... 132                    | Shoberg, J. .... 5                               | Union Mfg. Co. .... 63                      | Youngstown Iron & Steel Roofing Co. .... 12    |
| Morgan Construction Co. .... 11                | Phenix Iron Co. .... 27                          | Shultz Helting Co. .... 1                        | Union Metallic Cartridge Co. .... 1         |                                                |
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| Morley Bros. .... 109                          | Pierson & Co. .... 23                            | Sibley & Ware. .... 69                           | United Metals Selling Co. .... 3            |                                                |
| Morris, P. Hollingsworth. .... 47              | Pike Mfg. Co. .... 111                           | Sidney Steel Scraper Co. .... 13                 | U. S. Cast Iron Pipe & Foundry Co. .... 25  |                                                |
| Morrison, Robert. .... 47                      | Pilling & Crane. .... 1                          | Sigourney Tool Co. .... 67                       | U. S. Electro Galvanizing Co. .... 4        |                                                |
| Morse Twist Drill & Mch. Co. .... 59           | Pittkin, A. B. Machinery Co. .... 85             |                                                  | U. S. Projectile Co. .... 75                |                                                |
| Morse, Williams & Co. .... 54                  | Pittsburgh Mfg. Co. .... 59                      |                                                  |                                             |                                                |
| Morton, Thos. .... 130                         | Pittsburgh Reduction Co. .... 96                 |                                                  |                                             |                                                |
| Morton Mfg. Co. .... 69                        |                                                  |                                                  |                                             |                                                |
| Moseley Iron Bridge & Roof Co. .... 19         |                                                  |                                                  |                                             |                                                |
| Moseberg, Frank Co. .... 93                    |                                                  |                                                  |                                             |                                                |
| Moseberg & Granville Manufacturing Co. .... 80 |                                                  |                                                  |                                             |                                                |
| Muxford, A. .... 39                            |                                                  |                                                  |                                             |                                                |
| Murdoch Parlor Grate Co. .... 39               |                                                  |                                                  |                                             |                                                |
| Myers, F. E. & Bro. .... 114                   |                                                  |                                                  |                                             |                                                |

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Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.  
Reeves, Paul S., Philadelphia, Pa.  
Ryan, J. J. & Co., Chicago, Ill.
- Brass Goods**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Brass and Iron Jack Chains**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Bridge Builders**  
American Bridge Co., East Berlin, Ct.  
Boston Bridge Works, Boston, Mass.  
Easter Bridge & Structural Co., Worcester, Mass.  
Illinois Steel Co., Chicago, Ill.  
New England Structural Co., Boston, Mass.  
Scaife, Wm. B. & Sons, Pittsburgh.
- Bronze, Manganese**  
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
- Bronze Tobin**  
Ansonia Bronze & Copper Co., 90 John St., N. Y.
- Brooms and Brushes**  
Osborn Mfg. Co., Cleveland, O.
- Buffing Wheels**  
Divine Bros. Co., Utica, N. Y.
- Buggies**  
Parry Mfg. Co., Indianapolis, Ind.
- Builders' Hardware**  
Reading Hardware Co., Reading, Pa.  
Stanley Works, New Britain, Conn.  
U. S. Steel Lock Co., Clinton, Iowa.
- Bulldozers**  
Williams, White & Co., Moline, Ill.
- Butchers' Saws**  
Dison, Henry & Sons, Inc., Phila., Pa.  
Goodell-Pratt Co., Greenfield, Mass.  
Jennings, C. E. & Co., 101 Reade St., N. Y.
- Butchers' Tools**  
Chaffillon, John & Sons, 35-39 Cliff St., N. Y.  
Goodell Co., Antrim, N. H.
- Butts and Hinges—See Hinges.**
- Buyers' System**  
Folding Paper Box Co., So. Bend, Ind.
- Calibers and Dividers**  
Starrett, L. S. Co., Athol, Mass.  
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
- Car Springs**  
Scott, Chas. Spring Co., Phila., Pa.
- Car Wheels**  
Ramapo Car Wheel Co., Ramapo, N. Y.
- Carbide of Silicon**  
Carborundum Co., Niagara Falls, N. Y.
- Carborundum Grains**  
Carborundum Co., Niagara Falls, N. Y.
- Carborundum Wheels**  
Carborundum Co., Niagara Falls, N. Y.
- Carriage Hardware**  
Atlas Bolt & Screw Co., Cleveland, O.  
Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.  
Clapp, E. D. Mfg. Co., Auburn, N. Y.  
Eccles, Richard, Auburn, N. Y.  
McKinnon Dash Co., Buffalo, N. Y.  
Scranton Forging Co., Scranton, Pa.
- Carriage and Wagon Springs**  
Rowland, Wm. & Harvey, Phila., Pa.
- Cars**  
Atlas Bolt & Screw Co., Cleveland, O.  
Sheffield Car Co., Three Rivers, Mich.
- Cartridges**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.  
Peters Cartridge Co., Cincinnati, O.  
Union Metallic Cartridge Co., 313-315 Broadway, N. Y.
- Carving Tools**  
Buck, Chas., Milbury, Mass.
- Case Hardening Material**  
American Carburizing Co., Jersey City, N. J.
- Cash Recorders**  
Hough Cash Recorder Co., Indian Orchard, Mass.  
Whiting Mfg. Co., Northboro, Mass.
- Castings, Atlas Metal**  
Ferro-Carbon Castings Co., Phila., Pa.
- Castings, Brass, Bronze and Copper**  
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.  
Chapman, J. B. & Co., Springfield, Mass.  
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.  
Ryan, J. J. & Co., Chicago, Ill.  
West Side Foundry Co., Troy, N. Y.
- Castings, Finished**  
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
- Castings, Iron**  
Albany Foundry Co., Albany, N. Y.  
Barney & Reed Mfg. Co., Boston, Mass.  
Baush Mch. Tool Co., Springfield, Mass.  
Booth, The Lloyd Co., Youngstown, O.  
Bayley, Wm. & Sons Co., Milwaukee, Wis.  
Cheney, S. & Son, Manlius, N. Y.  
Chisholm & Moore Mfg. Co., Cleveland.  
Clark, John W., Albany, N. Y.  
Coding Mfg. Co., Bristol, Conn.  
Coleman Hardware Co., Chicago, Ill.  
Crane, Wm. M. Co., 131 Broadway, N. Y.  
Diamond Drill & Mch. Co., Birdsboro, Pa.  
Farrel Fdry & Mch. Co., Ansonia, Ct.  
Forest City Foundry & Mfg. Co., Cleveland, Ohio.  
Livermore, H. F., Boston, Mass.  
Lombard Iron Works & Supply Co., Augusta, Ga.  
Lorain Foundry Co., Lorain, Ohio.  
New Albany Mfg. Co., New Albany, Ind.  
New Brunswick Fdy. Co., New Brunswick, N. J.  
Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.  
Phila. Roll & Mch. Co., Philadelphia, Pa.  
Ramapo Car Wheel Co., Ramapo, N. Y.  
Randolph Iron Co., Brooklyn, N. Y.  
Sessions Foundry Co., Bristol, Conn.  
Smith & Caffrey, Syracuse, N. Y.  
Spencer's I. S. Sons, Guilford, Conn.  
Standard Fdy. & Mfg. Co., Cleveland, O.  
U. S. Cast Iron Pipe & Foundry Co., Phila., Pa.  
West Side Foundry Co., Troy, N. Y.  
Wetherill, Robert & Co., Chester, Pa.  
Wheeling Mold & Fdry. Co., Wheeling, W. Va.  
Youngtown Fdry. & Mch. Co., Youngstown, O.
- Castings, Malleable**  
Acme Steel and Mall. Iron Works, Buffalo, N. Y.  
Arcade Mall. Iron Co., Worcester, Mass.  
Hammer & Co., Branford, Conn.  
Illinois Mall. Iron Co., Chicago, Ill.  
Jarecki Mfg. Co., Erie, Pa.  
York Mfg. Co., York, Pa.
- Castings, Steel**  
Arcade Malleable Iron Co., Worcester, Mass.  
Bethlehem Steel Co., So. Bethlehem, Pa.  
Chester Steel Casting Co., Phila., Pa.  
Chr. ne Steel Works, Brooklyn, N. Y.  
Flagg, Stanley G. & Co., Phila., Pa.  
Lima Steel Casting Co., Lima, O.  
Livermore, Homer F., Boston, Mass.



Morris, F. Hollingsworth, Phila., Pa.  
New England Steel Castings Co., Phila-  
delphia, Pa.  
Otis Steel Co., Ltd., Cleveland, Ohio  
Union Steel Casting Co., Pittsburgh, Pa.

**Catalogue Files**  
Folding Paper Box Co., So. Bend, Ind.

**Ceilings, Metal**  
Youngstown Iron & Steel Roofing Co.,  
Youngstown, O.

**Cements, Iron**  
Smooth On Mfg. Co., Jersey City N. J.

**Chains**  
Bradlee & Co., Philadelphia.  
Bridgeport Chain Co., Bridgeport, Ct.  
Chillicothe-Evans Chain Co., Allegheny,  
Pa.  
Garland Chain Co., Rankin, Pa.  
Hale Bros., Worcester, Mass.  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.  
Jenkins Iron & Tool Co., Howard, Pa.  
Link-Belt Engineering Co., Phila., Pa.  
McKay Jax & Co., Pittsburgh, Pa.  
Nicholson & Co., Pittsburg, Pa.  
Onelida Community, Ltd., Niagara Falls  
Standard Chain Co., Pittsburgh, Pa.

**Chain Plants**  
Turner, Vaughn & Taylor Co., Cuya-  
goza Falls, O.

**Chemicals**  
Kim-r & Amend, New York.

**Cherry Stoners**  
Enterprise Mfg. Co., Philadelphia, Pa.  
Goodell Co., Antrim, N. H.

**Chisels**  
Buck Bros., Millbury, Mass.  
Buck, Chas., Millbury, Mass.  
Jennings, C. E., 101 Reade St., N. Y.  
White, L. & J. Co., Buffalo, N. Y.

**Christmas Tree Holders**  
North Bros. Mfg. Co., Philadelphia, Pa.

**Chucks**  
Cushman Chuck Co., Hartford, Conn.  
Doebler Mfg. Co., Middletown, Conn.  
Goodell Pratt Co., Greenfield, Mass.  
Hogson & Pettit Mfg. Co., New Haven,  
Conn.  
Holland Mfg. Co., Erie, Pa.  
Horton, E. & Son Co., Windsor Locks, Ct.  
Ideal Machine Works, Hartford, Conn.  
Pratt Chuck Co., Frankfort, N. Y.  
Skinner Chuck Co., New Britain, Conn.  
Standard Tool Co., Cleveland, O.  
Union Mfg. Co., 103 Chambers, N. Y.  
Whitton, D. E. Mach. Co., New London,

**Cider Mills**  
Whitehurst, R. W. & Co., Norfolk, Va.

**Circular Sawing Machines**  
Kiddler, R. E., Worcester, Mass.

**Clamps**  
Besley, C. H. & Co., Chicago, Ill.  
Hall, Thos., Brooklyn, N. Y.  
Hammer & Co., Branford, Conn.

**Clipping Machines**  
Amer. Shearer Mfg. Co., Nashua, N. H.  
Chicago Flexible Shaft Co., Chicago, Ill.  
McCoy, Jos. F., Co., 36 Warren St., N. Y.  
Wiebusch & Hilger, Ltd., 9-15 Murray  
St., N. Y.

**Clothes Dryers**  
Hill Dryer Co., Worcester, Mass.

**Clothes Line Hook**  
Wilson, E. H. & Co., Allston, Mass.

**Clothes Pins**  
U. S. Clothes Pin Co., Montpelier, Vt.

**Coal**  
Alabama Consolidated Coal & Iron Co.,  
Birmingham, Ala.  
Sloss Sheffield Steel & Iron Co., Bir-  
mingham, Ala.  
Washington Coal & Coke Co., Dawson,  
Pa.  
Wister, Francis, Philadelphia, Pa.

**Coal Cars**  
Lansing Wheelbarrow Co., Lansing,  
Mich.

**Coal Picks**  
Jenkins Iron & Tool Co., Howard, Pa.

**Coal Shutes**  
Lansing Wheelbarrow Co., Lansing,  
Mich.

**Concasters**  
Eclipse Bicycle Co., Elmira, N. Y.

**Coffee and Spice Mills**  
Arcade Mfg. Co., Freeport, Ill.  
Parker, Chas. Co., Meriden, Conn.

**Coke**  
Alabama Consolidated Coal & Iron Co.,  
Birmingham, Ala.  
Besemer Coke Co., Pittsburgh, Pa.  
Ferracut Iron Co., Pittsburgh, Pa.  
Dimmick, J. K. & Co., Phila., Pa.  
Frick, H. C. Coke Co., Pittsburgh, Pa.  
Houson, C. B. & Co., Philadelphia, Pa.  
Sloss Sheffield Steel & Iron Co., Bir-  
mingham, Ala.  
Tennessee Coal, Iron & R. R. Co., Bir-  
mingham, Ala.  
Virginia Iron, Coal & Coke Co., Bristol,  
Va., Tenn.  
Washington Coal & Coke Co., Dawson,  
Pa.  
Wister, Francis, Philadelphia, Pa.

**Colleges**  
Michigan College of Mines, Houghton,  
Mich.

**Compressed Air Machinery**  
Phila. Pneumatic Tool Co., Phila. Pa.

**Conductor Pipe**  
Berger Bros. Co., Philadelphia, Pa.

**Conveying Machinery**  
Aultman Co., Canton, Ohio.  
Brown Hoisting & Conveying Machine  
Co., Cleveland, Ohio.  
California Wire Works, San Francisco.  
Hunt, G. W. Co., New Brighton, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Engineering Co., Phila., Pa.

**Cooking Utensils**  
Cleveland Stamping & Tool Co., Cleve-  
land, O.

**Copper**  
Hendricks Bros., 49 Cliff, N. Y.  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.  
United Metals Selling Co., 11 Broadway,  
N. Y.

**Copper Hammers**  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.

**Copper Nail Bands**  
American Steel & Wire Co., Chicago, Ill.

**Copper Rivets and Burrs**  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.

**Copper Tacks and Nails**  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.

**Copper Wire, Bare and Insulated**  
American Steel & Wire Co., Chicago, Ill.

**Cordage**  
Samson Cordage Works, Boston, Mass.  
Silver Lake Co., Boston, Mass.

**Cordage Machinery**  
Hoover & Gamble Co., Miamisburg, O.

**Core Ovens**  
Millet Core Oven Co., Brightwood, Mass.

**Cork Screws and Cork Rollers**  
Erie Specialty Co., Erie, Pa.

**Corn Hooks**  
Withington & Cooley Mfg. Co., Jackson,  
Mich.

**Corn Huskers**  
Wilcox Mfg. Co., Aurora, Ill.

**Corrugated Iron and Steel**  
Garry Iron & Steel Roofing Co., Cleve-  
land, O.  
McCullough Iron Co., Wilmington, Del.  
Seale, Wm. B. & Sons, Pittsburgh.

**Corundum**  
National Abrasive Mfg. Co., Phila., Pa.

**Cotter Pin Machines, Automatic**  
Shuster, F. B. Co., New Haven, Conn.

**Cotton Ties**  
American Steel Hoop Co., Battery Park  
Building, N. Y.

**Counting Machines**  
Durant, W. N. Milwaukee Wis.

**Couplings, Compression**  
Sennett, Geo. B. Co., Youngstown, O.

**Cow Ties**  
Garland Chain Co., Rankin, Pa.  
Onelida Community, Ltd., Niagara Falls,

**Cranes**  
Brown Hoisting & Conveying Mch. Co.,  
Cleveland, O.  
Chisholm & Moore Mfg. Co., Cleveland,  
Cleveland Crane & Car Co., Cleveland, O.  
Niles Tool Works Co., 136-138 Liberty  
St., N. Y.  
Northern Engineering Works, Detroit,  
Mich.  
Pawling & Harnischfeger, Milwaukee,  
Wis.  
Pneumatic Crane Co., Pittsburgh, Pa.  
Reading Crane & Hoist Wks., Reading,  
Pa.  
Ridgway, Craig & Son Co., Coatesville,  
Pa.  
Speidel, J. G., Reading, Pa.

**Crayon**  
Steward, D. M. Mfg. Co., Chattanooga,  
Tenn.

**Crucibles**  
Dixon, Jos. Crucible Co., Jersey City,  
N. J.

**Capnols**  
Faxon, J. W. Co., Philadelphia, Pa.

**Capnols, Hot Blast**  
Byram & Co., Detroit, Mich.

**Curry Combs**  
New York Stamping Co., Brooklyn, N. Y.

**Cutlery**  
Cattaraugus Cutlery Co., Little Valley,  
N. Y.  
Chaffin, John & Sons, 85 to 89 Cliff St.,  
N. Y.  
Dame, Stoddard & Co., Boston.  
Goodell Co., Antrim, N. H.  
Kimball, G. J. Co., Bennington, N. R.  
Smith & Hemenway Co., 236 Broadway,  
N. Y.  
Wiebusch & Hilger, Ltd., 9 to 15 Murray  
St., N. Y.

**Cutting Off Machines**  
Hurlbut Rogers Mach. Co., So. Sudbury,  
Mass.

**Dampers**  
Williams, A. C., Ravenna, O.

**Dashes and Fenders**  
McKinnon Dash Co., Buffalo, N. Y.

**Diamond Tools**  
Dickinson, Thos. L., 45 Vesey St., N. Y.

**Dies**  
Adriance Mach. Works, Brooklyn, N. Y.  
American Hdw. Mfg. Co., Ottawa, Ill.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Ferracut Mach. Co., Bridgeton, N. J.  
Hay-Budden Mfg. Co., Brooklyn, N. Y.  
Mossberg, Frank Co., Attleboro, Mass.  
Richard Mfg. Co., Bloomsburg, Pa.  
Wilson & Smith, Worcester, Mass.

**Door Bells**—See Bells and Gongs.

**Door Checks and Springs**  
Bardley, Jos., 147 151 Baxter St., N. Y.  
Fullman Sash Balance Co., Rochester,  
N. Y.

**Door Holders**  
Brohard Co., Phila., Pa.  
Caldwell Mfg. Co., Rochester, N. Y.

**Draught Springs**  
Burditt & Williams, Boston, Mass.

**Draw Benches**  
Richard Mfg. Co., Bloomsburg, Pa.  
Thompson, Hugh L., Waterbury, Ct.

**Drill Grinders**  
Heald, L. S. & Son, Barre, Mass.  
Sellers, Wm. & Co., Inc., Phila., Pa.  
Washington Shops of Worcester Poly-  
technic Inst., Worcester, Mass.  
Wilmarth & Morgan, Grand Rapids,  
Mich.

**Drilling Machines**  
Barnes, R. F. Co., Rockford, Ill.  
Barnes, W. F. & John Co., Rockford, Ill.  
Baush Mch. Tool Co., Springfield, Mass.  
Bement, Miles & Co., Phila., Pa.  
Bickford Drill & Tool Co., Cin., Ohio.  
Bullard Machine Tool Co., Bridgeport,  
Ct.  
Burnham, Geo. Co., Worcester, Mass.  
Champion Blower & Forge Co., Lancas-  
ter, Pa.  
Cincinnati Mch. Tool Co., Cincinnati, O.  
Dallitt, Thos. H. & Co., Philadelphia.  
D'Amour & Littlefield Mch. Co., 151  
Worth St., N. Y.  
Davis, W. F., Machine Co., Rochester,  
N. Y.

Detrick & Harvey Mch. Co., Baltimore,  
Md.  
Harrington, E. Son & Co., Phila., Pa.  
Hill, Clarke & Co., Boston, Mass.  
Hoefler Mfg. Co., Freeport, Ill.  
Prentice Bros., Worcester, Mass.  
Quint, A. D., Hartford, Conn.  
Shuster, F. B. Co., New Haven, Conn.  
Sibley & Ware, So. Bend, Ind.  
Sigourney Tool Co., Hartford, Conn.  
Silver Mfg. Co., Salem, O.  
Slate Dwight Machine Co., Hartford,  
Ct.  
Flexible Shaft Co., Phila., Pa.  
Wiley & Russell Mfg. Co., Greenfield,  
Mass.  
York, S. M. Co., Cleveland, O.

**Drilling Machines, Automatic**  
Gould & Eberhardt, Newark, N. J.

**Drills, Pneumatic**  
Chicago Pneumatic Tool Co., Chicago,  
Ill.

**Drop Forgings**  
Belden Machine Co., New Haven, Conn.  
Billings & Spencer Co., Hartford, Conn.  
Chicago Drop Forging & Fdry. Co.,  
Springfield, Ill.  
Clapp E. D. Mfg. Co., Auburn, N. Y.  
Consolidated Railway Electric Light-  
ing & Equipment Co., 100 Broadway,  
N. Y.  
Eccles, Richard, Auburn, N. Y.  
Indianapolis Drop Forging Co., Indian-  
apolis, Ind.  
Keystone Drop Forge Co., Philadelphia.  
Kilborn & Bishop Co., New Haven, Conn.  
R. I. Tool Co., Providence, R. I.  
Scranton Forging Co., Scranton, Pa.  
Seward, M. & Son Co., New Haven, Ct.  
Springfield Drop Forging Co., Spring-  
field, Mass.  
Strieby & Foote Co., Newark, N. J.  
Tranue & Williams Co., Alliance, O.  
Williams, J. H. & Co., Brooklyn, N. Y.  
Wyman & Gordon, Worcester, Mass.

**Drop Hammers**  
Billings & Spencer Co., Hartford, Conn.  
Williams, White & Co., Moline, Ill.

**Drop Presses**  
Manville, E. J. Mch. Co., Waterbury, Ct.  
Miner & Peck Mfg. Co., New Haven, Ct.  
Mossberg & Granville Mfg. Co., Providence,  
R. I.  
Vulcan Iron Works, Chicago, Ill.

**Drilling Machines**  
Aurora Tool Works, Aurora, Ind.  
Dresses, Mueller & Co., Cincinnati, O.

**Dumb Waiters**  
Energy Elevator Co., Philadelphia, Pa.  
Speidel, J. G., Reading, Pa.  
Storm Mfg. Co., Newark, N. J.  
Variety Machine Co., Warsaw, N. Y.

**Dump Cars**  
Atlas Bolt & Screw Co., Cleveland, O.

**Dynamoes**  
Eddy Electric Mfg. Co., Windsor, Conn.  
General Electric Co., Schenectady, N. Y.  
Westinghouse Elec. & Mfg. Co., Pitts-  
burgh, Pa.

**Eave Trough Hangers**  
Berger Bros. Co., Philadelphia, Pa.  
Oatman Bros., Medina, O.

**Edge Tools**  
Buck, Chas., Millbury, Mass.  
Buck Bros., Millbury, Mass.  
Ferro-Carbon Castings Co., Phila. Pa.  
White, L. & J. Co., Buffalo, N. Y.

**Egg Beaters**  
Lyon, Nelson, Albany, N. Y.  
Standard Co., Boston, Mass.

**Egg Opener**  
Hartigan, W. R., Collinsville, Ct.

**Electric Bells and Supplies**  
Ostrander, W. R. & Co., 204 Fulton St.

**Electric Controllers**  
Electric Controller & Supply Co., Cleve-  
land, O.

**Electric Lighting and Power Ap-  
paratus**  
Eddy Electric Mfg. Co., Windsor, Conn.  
General Electric Co., Schenectady, N. Y.

**Electrical Apparatus**  
Westinghouse Elec. & Mfg. Co., Pitts-  
burgh, Pa.

**Electrical Supplies**  
Mianus Electric Co., Mianus, Conn.

**Electrotypes**  
St. Louis Electrotpe Foundry, St.  
Louis, Mo.

**Elevators, Makers of**  
Eastern Machinery Co., New Haven, Ct.  
Energy Elevator Co., Philadelphia, Pa.  
Link-Belt Engineering Co., Phila., Pa.  
Morris, Williams & Co., Phila., Pa.  
Ridgway, Craig & Son Co., Coatesville,  
Pa.  
Speidel, J. G., Reading, Pa.  
Variety Machine Co., Warsaw, N. Y.

**Elevator Buckets**  
Clark, W. J. & Co., Salem, O.  
Cleveland Elevator Bucket Co., Cleve-  
land, O.

**Elevator Enclosures and Cabs**  
Ludlow Saylor Wire Co., St. Louis, Mo.

**Emery**  
Tanite Co., Stroudsburg, Pa.

**Emery Wheels**  
American Emery Wheel Works, Provi-  
dence, R. I.  
Best, L. & Vesey St., N. Y.  
Bridgeport Safety Emery Wheel Co.,  
Bridgeport, Conn.  
Buffalo Emery Wheel Co., Buffalo, N. Y.  
Diamond Mach. Co., Providence, R. I.  
Nazel & Bassett, Phila., Pa.  
Northampton Emery Wheel Co., Leeds,  
Mass.  
Norton Emery Wheel Co., Worcester,  
Mass.  
Safety Emery Wheel Co., Springfield, O.  
Springfield Mfg. Co., Bridgeport, Conn.  
Star Corundum Wheel Co., Detroit,

Sterling Emery Wheel Co., Tiffin, O.  
Tanite Co., Stroudsburg, Pa.  
Vitified Emery Wheel Co., Westfield,  
Mass.

**Emery Wheel Dresser**  
Chicago Screw Co., Chicago, Ill.  
Dickinson, Thos. L., 45 Vesey St., N. Y.

**Engineers and Contractors**  
Alken, Henry, Pittsburgh, Pa.  
Erikson, Edw. E., Pittsburgh, Pa.  
Filer & Stowell Co., Milwaukee, Wis.  
Heyl & Patterson, Pittsburgh, Pa.  
Huber, S. V. Co., Pittsburgh, Pa.  
Kay, G. Ashton, 233 Broadway, N. Y.  
Kennedy, Julian, Pittsburgh, Pa.  
Kennedy, Walter, Pittsburgh, Pa.  
Lamond, David, Pittsburgh, Pa.  
Laughlin, Alex & Co., Pittsburgh, Pa.  
McClure, G. W. Son & Co., Pittsburgh,  
Pa.  
Miller Engineering Co., Pittsburgh, Pa.  
Morgan Construction Co., Worcester,  
Mass.  
Penna. Engineering Wks., New Castle,  
Penna.  
Ritter-Conley Mfg. Co., Pittsburgh, Pa.  
Smythe, S. K. Co., Inc., Pittsburgh, Pa.  
Swindell, W. & Bros., Pittsburgh, Pa.  
Thompson, Hugh L., Waterbury, Ct.  
Wellman Seaver Engineering Co., Cleve-  
land, O.

**Engines**  
Gas.  
Mietz, Aug., 125-126 Mott St., N. Y.  
Northern Engineering Works, Detroit,  
Mich.  
Woolley Fdry. & Mch. Works, Ander-  
son, Ind.  
Gasoline.  
Charter Gas Engine Co., Sterling, Ill.  
Weber Gas & Gasoline Engine Co., Kas-  
sia City, Mo.  
Watkins, F. M., Cincinnati, O.  
Woolley Fdry. & Mch. Works, Ander-  
son, Ind.  
Kerosene.  
Mietz, Aug., 125-126 Mott St., N. Y.  
Steam.  
Allis, E. P. Co., Milwaukee, Wis.  
Boston Blower Co., Hyde Park, Mass.  
Buffalo Forge Co., Buffalo, N. Y.  
Filer & Stowell Co., Milwaukee, Wis.  
Newport News Shipbuilding & Dry Dock  
Co., 1 Broadway, N. Y.  
Sennett, Geo. B. Co., Youngstown, O.  
Southward Fdry. & Mch. Co., Phila-  
delphia, Pa.  
Sprentz, B. F. Co., Boston, Mass.  
Tod, William & Co., Youngstown, O.  
Totten & Hogg Iron & Steel Fdry. Co.,  
Pittsburgh, Pa.  
Wetherill, Robt. & Co., Chester, Pa.

**Engines, Marine**  
Lake City Engineering Co., Erie, Pa.

**Engines, Second Hand**  
Everson, R. M., Pittsburgh, Pa.

**Engravers**  
Mugford A., Hartford, Conn.

**Expanding Mandrels**  
LeCount, Wm. G., So. Norwalk, Conn.

**Expansion Bolts**  
Church, Isaac Toledo, O.  
McCabe Hanger Mfg. Co., 335-343 W. 23d  
St., N. Y.  
Newhall, Henry B. Co., N. Y.  
Seaman D. C. & Co., Philadelphia, Pa.  
Steward & Romaine Mfg. Co., Phila., Pa.

**Exposition**  
Merchants' & Manufacturers' Exposi-  
tion, Boston, Mass.

**Farriers' Tools**  
Heller Bros. & Co., Newark, N. J.

**Faucets, Wooden**  
Boston & Lockport Block Co., Boston,  
Mass.

**Fence**  
Sommer's, John, Son, Newark, N. J.

**Feed Cutters**  
Silver Mfg. Co., Salem, O.

**Feed Water Heaters and Part  
ners**  
Harrison Safety Boiler Works, Phila-  
delphia, Pa.  
Kelly, B. F. & Son, 91 Liberty St., N. Y.  
National Pipe Bending Co., New Haven,  
Patterson, F. L., 136 Liberty St., N. Y.  
Taunton Locomotive Mfg. Co., Taunton,  
Mass.  
Webster, Warren & Co., Camden, N. J.  
Whitlock Oil Pipe Co., Hartford, Ct.

**Fencing, Iron and Wire**  
Adam, W. J., Joliet, Ill.  
American Steel & Wire Co., Chicago, Ill.  
Barnum, K. T., Detroit, Mich.  
Clinton Wire Cloth Co., Clinton, Mass.  
DeKalb Fence Co., DeKalb, Ill.  
Dwiggins Wire Fence Co., Anderson,  
Ind.  
Ellis & Halphenberger, Indianapolis, Ind.  
Frost Wire Fence Co., Cleveland, O.  
Gilbert & Bennett Mfg. Co., 2 Cliff St.,  
Hartman Mfg. Co., 309 Broadway, N. Y.  
Kilmer Wire Mfg. Co., Chicago, Ill.  
Kokomo Fence Mch. Co., Kokomo, Ind.  
Ludlow Saylor Wire Co., St. Louis, Mo.  
Ornamental Iron & Wire Co., Chate-  
naux, Tenn.  
Rossman Woven Wire Fence Co., Bos-  
ton, N. Y.  
Stewart Iron Works, Cincinnati, Ohio.  
Up-to-date Mfg. Co., Terre Haute, Ind.

**Ferro-Chromium**  
Wilson Aluminum Co., 99 Cedar Street,  
N. Y.

**Files and Rasps**  
Manufacturers of  
Arcade File Works, Anderson, Ind.  
Barnett, G. & H. Co., 41 & 43 Richmond  
St., Phila.  
Diston, Henry & Sons, Inc., Phila., Pa.  
Heller Bros. Co., Newark, N. J.  
McCaffrey File Co., Philadelphia.  
Nicholson File Co., Providence, R. I.  
Stokes Bros. Mfg. Co., Freshford, N. J.

**Filters**  
Seale, Wm. B. & Sons, Pittsburg, Pa.

**Finished Castings**  
Franklin, H. H. Mfg. Co., Syracuse,  
N. Y.

**Fire Brick**

Borgner, Cyrus, Philadelphia, Pa.  
Gardner Bros., Cumberland, Md.  
Haws, W. H. Fire Brick Co., Mt. Union,  
Ma. H. & Son, 420 E. 23d, N. Y.  
Ostrander Fire Brick Co., Troy, N. Y.  
Poinier & Lester, Toledo, O.  
Presbrey Fire Brick Co., Taunton, Mass.  
Staten Island Clay Co., Woodbridge,  
Taylor's, Chas. Sons Co., Cincinnati.  
Valentine, M. D. & Bro. Co., Woodbridge.

**Fishing Tackle**

Dame, Stoddard & Co., Boston, Mass.

**Flexible Shafting**

Chicago Flexible Shaft Co., Chicago, Ill.  
Stow Flexible Shaft Co., Phila., Pa.  
Stow Mfg. Co., Binghamton, N. Y.

**Flint and Emery Paper**

Baeder, Adamson & Co., Phila., Pa.

**Floor and Ceiling Plates**

Codding Mfg. Co., Bristol, Conn.

**Flue Cleaners**

Jackson Flue Scraper Co., Jackson,  
Jarecki Mfg. Co., Erie, Pa.

**Fly Killers**

Higelow, J. F., Worcester, Mass.  
Montgomery, R. R. & Co., Decatur, Ill.

**Foot Power Emery Wheels**

Buffalo Emery Wheel Co., Buffalo, N. Y.

**Foot Pumps**

Gleason-Peters Air Pump Co., Houston  
and Mercer Sts., N. Y.

**Foot Rests**

Star Heel Plate Co., Newark, N. J.

**Forges, Portable, &c.**

Bradley Co., Syracuse, N. Y.  
Champion Blower & Forge Co., Lancaster,  
Pa.  
Fairbanks Co., 311 Broadway, N. Y.  
Sturtevant, B. F. Co., Boston, Mass.

**Forgings, Iron and Steel**

Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.  
Bethlehem Steel Co., S. Bethlehem, Pa.  
Eastern Forge Co., Boston, Mass.  
Frankford Steel Co., Phila., Pa.  
Hay-Budden Mfg. Co., Brooklyn, N. Y.  
Otis Steel Co., Ltd., Cleveland, Ohio.  
Pittsburgh Shear, Knife & Machine Co.,  
Pittsburgh, Pa.  
Titusville Forge Co., Titusville, Pa.  
U. S. Projectile Co., Brooklyn, N. Y.  
Vulcanus Forging Co., Cleveland, O.

**Forks, Hay and Manure**

Continental Tool Co., Frankfort, N. Y.  
Iowa Farming Tool Co., Ft. Madison, Ia.  
Wilmington & Cooley Mfg. Co., Jackson.

**Foundry Facings**

Obermayer, S. Co., Cincinnati, O.

**Foundry Lamps**

Forest City Fdy. & Mfg. Co., Cleveland.  
Paxson, J. W. Co., Phila., Pa.

**Foundry Supplies**

Gilmour, J. Bennett Building, N. Y.  
Obermayer, S. Co., Cincinnati, Ohio.  
Osborn Mfg. Co., Cleveland, O.  
Paxson, J. W. Co., Phila., Pa.  
Poinier & Lester, Toledo, O.

**Friction Clutches**

Eastern Machinery Co., New Haven, Ct.

**Furnaces, Foundry**

Byram & Co., Detroit, Mich.

**Furnaces, Oil, Gas and Coal**

Rockwell Engineering Co., 36 Cortlandt  
St., N. Y.

**Fuses**

Ensign Bickford & Co., Simsbury, Ct.

**Gages**

Crosby Steam Gage & Valve Co., Boston.  
Galvanized Ware  
Keen & Hagerty Mfg. Co., Baltimore.

**Galvanizing**

Blackman & King, 801 Greenwich St.,  
N. Y.  
Empire Pipe Bending & Supply Co.,  
Brooklyn, N. Y.

**Galvanizing Process**

U. S. Electro Galvanizing Co., 348 Broad-  
way, N. Y.

**Garden Rakes**

Jenkins Iron & Tool Co., Howard, Pa.

**Garden Tools**

Wilmington & Cooley Mfg. Co., Jackson.

**Gas Compositometer**

Uehling, Steinbairt & Co., Ltd., Carl-  
stadt, N. J.

**Gas Compressors**

Norwalk Iron Works Co., So. Norwalk,  
Conn.

**Gas Furnaces**

Am. Gas Furnace Co., 23 John St., N. Y.  
Chicago Flexible Shaft Co., Chicago, Ill.

**Gaskets**

Canfield, H. O., Bridgeport, Conn.

**Gaskets, Iron**

Smith On Mfg. Co., Jersey City, N. J.

**Gas Producers**

Duff Patents Co., Allegheny, Pa.  
Myrthe, S. R. Co., Inc., Pittsburgh, Pa.  
Swindell, W. & Bro., Pittsburgh, Pa.

**Gauges, Rolling Mill**

Haines Gauge Co., Philadelphia, Pa.

**Gears**

Boston Gear Works, Boston, Mass.  
Crescon, Geo. V. Co., Philadelphia, Pa.  
Gleason Tool Co., Rochester, N. Y.  
Morse, Williams & Co., Phila., Pa.  
Nuttall, R. D. Co., Pittsburgh, Pa.  
Poele, Robt. Son & Co., Baltimore, Md.

**Gears, Rawhides**

Horsburgh & Scott, Cleveland, Ohio.

**Gear Cutters**

Becker Brand Milling Machine Co.,  
Hyde Park, Mass.  
Gould & Eberhardt, Newark, N. J.  
Whitton, D. E. Mch. Co., New London,

**Generators, Electric**

Westinghouse Elec. & Mfg. Co., Pitts-  
burgh, Pa.

**Gliders**

Norton Mfg. Co., Chester, Conn.

**Glass Cutters**

Barrett, W. L., Bristol, Conn.  
Bultman, F. H. & Co., Cleveland, O.  
Monce, S. G., Unionville, Conn.  
Smith & Hemenway Co., 296 Broadway,  
N. Y.

**Glass Cutting Boards**

Lufkin Rule Co., Saginaw, Mich.

**Glue**

Baeder, Adamson & Co., Phila., Pa.

**Golf Goods**

Bridgeport Gun Implement Co., 312  
Broadway, N. Y.

**Grates, Rocking**

Sennett, Geo. B. Co., Youngstown, O.

**Grease, Axle**

Snow Flake Axle Grease Co., Boston.

**Grinding and Polishing Mchs.**

American Emery Wheel Works, Provi-  
dence, R. I.  
Barnes, W. F. & John Co., Rockford, Ill.  
Bealy, Chas. H. & Co., Chicago, Ill.  
Brown & Sharpe Mfg. Co., Providence.  
Cincinnati Milling Mach. Co., Cin-  
cinnati, O.

**Grinding and Polishing Mchs.**

Diamond Mach. Co., Providence, R. I.  
Landis Tool Co., Waynesboro, Pa.  
Northampton Emery Wheel Co., Leeds,  
Mass.  
Norton Emery Wheel Co., Worcester,  
Mass.

**Safety Emery Wheel Co., Springfield, O.**

Springfield Mfg. Co., Bridgeport, Conn.  
Star Corundum Wheel Co., Detroit,  
Mich.  
Tantle Co., Stroudsburg, Pa.  
Universal Mach. Co., Providence, R. I.  
Wilmarth & Norman, Grand Rapids,

**Grindstones**

Cleveland Stone Co., Cleveland, O.  
Velox Machine Works, Chicago, Ill.

**Grabbing Machine**

New Century Mfg. Co., 48 E. 8th St.,  
N. Y.

**Guns**

Marlin Fire Arms Co., New Haven, Ct.  
Remington Arms Co., 315 Broadway,  
New York

**Gymnasium Apparatus**

Narragansett Mch. Co., Providence, R. I.

**Hack Saws**

Diaston, Henry & Sons, Inc., Phila., Pa.  
Goodell-Pratt Co., Greenfield, Mass.  
Springfield Machine Screw Co., Spring-  
field, Mass.  
Starrett, L. S. Co., Athol, Mass.

**Hack Saw Frames**

Millers Falls Co., 28 Warren St., N. Y.

**Hammer Mold**

Field, C. H., Providence, R. I.

**Hammers**

Heller Bros. Co., Newark, N. J.  
Logan & Strobridge Iron Co., New  
Brighton, Pa.

**Hammers, Pneumatic**

Chicago Pneumatic Tool Co., Chicago.

**Hammerheads**

Palmer, I. E., Middletown, Conn.  
Bicknell Hdw. Co., Janesville, Wis.

**Hand Screws**

Bliss, R. Mfg. Co., Pawtucket, R. I.

**Handle Machinery**

Defiance Machine Works, Defiance, O.

**Hangers, Barn Door**

Coleman Hardware Co., Chicago, Ill.

**Hangers, Door**

Chicago Spring Butt Co., Chicago, Ill.  
Coburn Trolley Track Mfg. Co., Hol-  
yoke, Mass.  
Cronk Hanger Co., Elmira, N. Y.  
Lane Bros., Poughkeepsie, N. Y.  
Lawrence Bros., Sterling, Ill.  
Louden Machinery Co., Fairfield, Iowa.  
McCabe Hanger Mfg. Co., 533-543 W. 22d  
Street, N. Y.  
McKinney Mfg. Co., Allegheny, Pa.  
Ney Mfg. Co., Canton, Ohio.  
Stowell Mfg. & Foundry Co., So. Mil-  
waukee, Wis.  
Wilcox Mfg. Co., Aurora, Ill.

**Hangers, Shafting**

Ball Bearing Co., Boston, Mass.  
Dodge Mfg. Co., Mishawaka, Ind.

**Hardware Comm'n Merchants**

Graham, Jno. H. & Co., 113 Chambers  
St., N. Y.  
Hungerford, U. T., Brass & Copper Co.,  
121 Worth St., N. Y.

**Hardware Manufacturers**

Arcade Mfg. Co., Freeport, Ill.  
Central Hardware Co., Phila.  
Coleman Hardware Co., Chicago, Ill.  
Logan & Strobridge Iron Co., New  
Brighton, Pa.  
Millers Falls Co., 28 Warren St., N. Y.  
Ney Mfg. Co., Canton, Ohio.  
Nicol & Co., Chicago, Ill.  
Parker, Chas. Co., Meriden, Conn.  
Peck, Stow & Wilcox Co., 27 Murray St.,  
N. Y.  
Stanley Works, New Britain, Conn.  
Union Mfg. Co., 108 Chambers St., N. Y.  
Van Wagoner & Williams Hdw. Co.,  
Cleveland, O.  
Wrightsville Hdw. Co., Wrightsville, Pa.

**Hardware Mfrs.' Agents**

Graham, John H. & Co., 113 Chambers  
St., N. Y.  
Wiebusch & Hilger, Ltd., 9-15 Murray  
St., N. Y.

**Hardware Shelving**

Warren, J. D. Mfg. Co., Chicago, Ill.

**Hardware Specialties**

Acme Shear Co., Bridgeport, Conn.  
Berger Bros. Co., Philadelphia, Pa.  
Enterprise Mfg. Co., of Pa., Phila., Pa.  
Graham, John H. & Co., 113 Chambers  
St., N. Y.  
Pleuger & Henger Mfg. Co., St. Louis,  
Scranton & Co., The, New Haven, Ct.  
Smith & Egge Mfg. Co., Bridgeport, Ct.

**Smith & Hemenway Co., 296 Broadway, N. Y.****Harness Snaps**

Covert Mfg. Co., West Troy, N. Y.  
Covert's Saddlery Wks., Farmer, N. Y.  
Imperial Bit & Snap Co., Racine, Wis.

**Haws and Staples**

McKinney Mfg. Co., Allegheny, Pa.

**Hatchets**

Jen-ins Iron & Tool Co., Howard, Pa.

**Hay Knives**

Clark & Parsons Co., E. Wilton, Me.  
Ney Mfg. Co., Canton, Ohio.

**Hay Tools**

Louden Machinery Co., Fairfield, Iowa.  
Myers, F. E. & Bro., Ashland, O.  
Ney Mfg. Co., Canton, O.

**Heating and Ventilating Apparatus**

American Blower Co., Detroit, Mich.  
Barley, Wm. & Sons Co., Milwaukee,  
Wis.  
Boston Blower Co., Hyde Park, Mass.  
Buffalo Forge Co., Buffalo, N. Y.  
Perrins, B. & Son, Holyoke, Mass.  
Sturtevant, B. F. Co., Boston, Mass.

**Heel Plates**

Star Heel Plate Co., Newark, N. J.

**Hinges**

Jenkins Iron & Tool Co., Howard, Pa.  
Lawrence Bros., Sterling, Ill.  
McKinney Mfg. Co., Allegheny, Pa.  
Stanley Works, New Britain, Conn.  
Tiebout, W. & J., 113 Chambers St., N. Y.

**Hitching Posts**

Hartman Mfg. Co., 309 Broadway, N. Y.

**Hoes, Garden, Planters', &c.**

Continental Tool Co., Frankfort, N. Y.  
Iowa Farming Tool Co., Fort Madison.  
Jenkins Iron & Tool Co., Howard, Pa.

**Holists, Air**

Pedrick & Ayer Co., Philadelphia, Pa.  
Ridgway, Craig & Son Co., Costesville,  
Pa.

**Holists, Chain and Rope**

Box, Alfred & Co., Philadelphia, Pa.  
Eckstein, C. G., 249 Centre St., N. Y.  
Fulton Iron & Engine Works, Detroit,  
Mich.  
Harrington, E. Son & Co., Phila., Pa.  
McCoy, Jos. F. & Co., 26 Warren St.  
Reading Crane & Hoist Works, Reading,  
Pa.

**Holists, Chain and Rope**

Speidel, J. G., Reading, Pa.

**Hoisting Machines**

Eastern Machinery Co., New Haven, Ct.  
Lidgerwood Mfg. Co., 96 Liberty St.,  
N. Y.

**Hollow Mill**

Geometric Drill Co., Westville, Conn.

**Hollow Ware**

Avery Stamping Co., Cleveland, Ohio.  
Cleveland Stamping & Tool Co., Cleve-  
land, O.  
New York Stamping Co., Brooklyn, N. Y.  
Rogers, Jno. M. Boat-Gauge & Drill  
Works, Gloucester, City, N. J.

**Horse Nails**

Capwell Horse Nail Co., Hartford, Ct.  
Mooney, W. M. & Co., Ausable Chas.,  
N. Y.  
National Horse Nail Co., Vergennes, Vt.  
Putnam Nail Co., Newport, Boston.  
Wiebusch & Hilger, Ltd., 9-15 Murray  
St., N. Y.

**Horse and Mule Shoes**

Burden Iron Co., Troy, N. Y.  
Phoenix Horse Shoe Co., Poughkeepsie,  
Rhode Island Perkins Horse Shoe Co.,  
Providence, R. I.

**Horsehoe Studs**

Leonhart & Co., Berlin, Schoneberg,  
Germany.

**Hose**

Boston Belting Co., Boston, Mass.  
Peerless Rubber Mfg. Co., 16 Warren  
Street, New York.

**Hose Couplings**

Clark, W. J. & Co., Salem, Ohio.

**Hose Coupling, Air**

Pedrick & Ayer Co., Philadelphia, Pa.

**Hose Washers**

Canfield, H. O., Bridgeport, Conn.

**House Furnishing Specialties**

Lloyd Mfg. Co., Minneapolis, Minn.  
Williams, A. C. Ravenna, O.

**Hydraulic Jacks**

Dudgeon, Richard, 24 Columbia St., N. Y.  
Henderer, A. L. Sons, Wilmington, Del.  
Watson-Stillman Co., 204 E. 43d St., N. Y.

**Hydraulic Machinery**

Watson-Stillman Co., 204 E. 43d St., N. Y.

**Hydraulic Presses**

Cornell, J. B. & J. M., 26th St. and 11th  
Ave., N. Y.

**Hydraulic Tools**

Watson-Stillman Co., 204 E. 43d St., N. Y.  
Wood, R. D. & Co., Phila., Pa.

**Ice Breakers**

Hes, C. A. & Co., Chicago.

**Ice Cream Dishers**

Seavey Mfg. Co., Boston, Mass.

**Ice Cream Freezers**

North Bros. Mfg. Co., Philadelphia, Pa.  
White Mountain Freezer Co., Nashua,  
N. H.

**Ice Making Machinery**

York Mfg. Co., York, Pa.

**Ice Picks**

Dodge Machine Screw Co., Boston, Mass.  
Erie Specialty Co., Erie, Pa.

**Ice Shredders**

Enterprise Mfg. Co., Philadelphia, Pa.  
Erie Specialty Co., Erie, Pa.

**Ice Tools**

Gerlach, Peter & Co., Cleveland, O.  
Williams, A. C. Ravenna, O.  
Wood, Wm. T. & Co., Arlington, Mass.

**Injectors**

Jenkins Bros., New York.

**Insurance, Boiler**

Hartford Steam Boiler Inspection and  
Insurance Co., Hartford, Conn.

**Iron and Steel, Swedish**

Harvey, Arthur C. Co., Boston, Mass.  
Lilienberg, N. 150 Broadway, N. Y.  
Milne, A. & Co., 1 Broadway, N. Y.  
Potts, Horace T. & Co., Phila., Pa.

**Iron Commission Brokers**

Cabene & Co., Phila., Pa.  
Cotton, Barclay W. & Co., Phila., Pa.  
Cox, Justice, Jr. & Co., Ltd., Phila., Pa.  
Etting, Edw. J., Philadelphia.  
Keeley, Jerome & Co., Philadelphia.  
Law, Ernest & Co., Phila., Pa.  
Levi, Henry & Co., Philadelphia.  
Lea, J. Tatnall & Co., Philadelphia.  
Mohr, J. J., 430 Walnut St., Philadelphia.  
Thomas Theodore, Utica, N. Y.  
Wister, L. & R. Co., Phila., Pa.

**Iron Manufacturers**

Newkirk, J. B. & Co., Philadelphia, Pa.  
Republic Iron & Steel Co., Chicago, Ill.

**Merchants**

Hole, Ross & Co., Pittsburgh, Pa.  
Cotton, Barclay W. & Co., Phila.  
Cunliffe, R. M., Phila., Pa.  
Law, Ernest & Co., Phila., Pa.  
McInnes, C. E. & Co., Phila., Pa.  
Ogden & Wallace, 577-583 Greenwich  
St., N. Y.  
Piers & Co., 29 Broadway, N. Y.  
Potts, Horace T. & Co., Phila., Pa.  
Thomson, W. H. & Co., Phila., Pa.  
Wallace, Wm. H. & Co., 66 E. 7th, N. Y.  
Wheeler, Mifflin & Co., Phila., Pa.  
Wilson, E. H. & Co., Philadelphia.

**Importers**

Wheelock-Lovejoy & Co.,



- Lemon Squeezers**  
Hagen & Reid, Troy, N. Y.  
Logan & Strawbridge Iron Co., New Brighton, Pa.  
Williams, A. C., Ravenna, O.
- Link Belting**  
Buhl Malleable Co., Detroit, Mich.
- Lockers**  
Narragansett Mch. Co., Providence, R.I.
- Locks and Knobs**  
Central Hardware Co., Phila., Pa.  
Reading Hdw. Co., Reading, Pa.  
U. S. Steel Lock Co., Clinton, Iowa.
- Locomotives**  
Everson, B. M., Pittsburgh, Pa.
- Logging Tools**  
Gerlach, Peter & Co., Cleveland, Ohio.
- Lubricants**  
Dixon, Jos. Crucible Co., Jersey City  
Snow Flake Axle Grease Co., Boston.
- Lumbering Tools**  
Morley Bros., Saginaw, Mich.
- Launch Boxes**  
Seavey Mfg. Co., Boston, Mass.
- Machinery**  
Acme Machinery Co., Cleveland, Ohio.  
Amick, Geo. E., 109 Liberty St., N. Y.  
Ajax Mfg. Co., Cleveland, Ohio.  
American Tool Wks. Co., Cincinnati, O.  
Baird, U. Machinery Co., Pittsburgh, Pa.  
Barnes, W. F. & John Co., Rockford, Ill.  
Baush Mch. Tool Co., Springfield, Mass.  
Becker-Brinard Milling Mach. Co., Hyde Park, Mass.  
Bliss E. W. Co., Brooklyn, N. Y.  
Bowler, Geo. H., Cleveland, O.  
Briggs, Marvin, 12 Broadway, N. Y.  
Brown & Sharpe Mfg. Co., Providence.  
Bullard Mch. Tool Co., Bridgeport, Ct.  
Carlin Machinery & Supply Co., Allegheny, Pa.  
Carlin's Sons, Thos., Allegheny, Pa.  
Chester Machinery Co., Havemeyer Bldg., N. Y.  
Cincinnati Milling Mach. Co., Cin. O.  
Cincinnati Planer Co., Cincinnati, Ohio.  
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York City.  
Davis, W. F. Machine Co., Rochester, N. Y.  
Dawson, A. L. & Co., Chicago, Ill.  
Detrick & Harvey Mch. Co., Baltimore, Md.  
Diamond Drill & Mch. Co., Birdsboro, Pa.  
Doan, J. B. & Co., Chicago, Ill.  
Draper Mach. Tool Co., Worcester, Mass.  
Farrel Fdry & Mch. Co., Ansonia, Conn.  
Ferracute Machine Co., Bridgeport, N. J.  
Fish, H. C. Machine Works, Worcester, Mass.  
Garvin Machine Co., Spring and Varick Sts., N. Y.  
General Supply Co., 40 John St., N. Y.  
Geometric Drill Co., Westville, Conn.  
Gray, Robt. J., 52 E. 132d St., N. Y.  
Hannan & Finton, Springfield, Mass.  
Harris Machy Co., Minneapolis, Minn.  
Hendey Machine Co., Torrington, Conn.  
Hill, Henry F., Boston, Mass.  
Hill, Clarke & Co., Boston, Mass.  
Johnson, Israel H., Jr., & Co., Phila.  
Johnson, Wm. C. & Sons Mch. Co., St. Louis, Mo.  
Kaiser, A. V. & Co., Phila., Pa.  
Keagy & Lear Mch. Co., Cohocton, O.  
Kerick, J. H., Minneapolis, Minn.  
Lodge & Shipley Mch. Tool Co., Cin. O.  
Lund, S. T., Boston, Mass.  
McCabe, J. J., 14 Dey Street, N. Y.  
McDowell & Co., Pittsburgh, Pa.  
McDonald Stocker & Co., Chicago.  
Manning, Maxwell & Moore, 85-89 Liberty St., N. Y.  
Manville, E. J. Mach. Co., Waterbury, Ct.  
Marshall & Hinchart Mchry. Co., Chicago, Ill.  
Mossberg, Frank Co., Attleboro, Mass.  
National Machinery Co., Tiffin, Ohio.  
New Doty Mfg. Co., Janesville, Wis.  
New Haven Mfg. Co., New Haven, Conn.  
New York Machinery Depot, 178 Broadway, New York.  
Niles Tool Works Co., 138 Liberty St., N. Y.  
Nilson, A. H. Mch. Co., Bridgeport, Ct.  
Paradox Machinery Co., Chicago, Ill.  
Pennsylvania Machinery Co., Phila., Pa.  
Phila. Machine Tool Co., Phila., Pa.  
Pittsburgh Mfg. Co., Pittsburgh, Pa.  
Pond Machine Tool Co., Plainfield, N. J.  
Pope, Robt. & Son Co., Baltimore, Md.  
Potter & Johnston Co., Pawtucket, R. I.  
Poultner & Co., Phila., Pa.  
Pratt & Whitney Co., Hartford, Conn.  
Prentice Bros., Worcester, Mass.  
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.  
Rainier & Williams, Chicago, Ill.  
Reade, Wm. A. & Co., Cleveland, O.  
Seyfert's Sons L. F., Philadelphia, Pa.  
Sigourney Tool Co., Hartford, Conn.  
Thomas & Lowe Machinery Co., Providence, R. I.  
Toomey, Frank, Philadelphia, Pa.  
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.  
Wetherill, Robert & Co., Chester, Pa.  
Windsor Machine Co., Windsor, Vt.  
Wormer, C. C. Mch. Co., Detroit, Mich.  
York, S. M. Co., Cleveland, O.
- Machinery, Wood Working**  
Defiance Machine Wks., Defiance, O.  
Fay, J. A. & Egan Co., Cincinnati, O.
- Machinery Springs**  
Scott, Chas. Spring Co., Phila., Pa.
- Machinery Builders**  
Chapman, J. B. & Co., Springfield, Mass.  
U. S. Projectile Co., Brooklyn, N. Y.
- Machine Knives**  
Loyd, John, 538-542 Water St., N. Y.
- Machine Screws—See Screws, Machine**
- Machine Screw Work**  
Spencer Automatic Mch. Screw Co., Hartford, Conn.
- Machine Tools—See Machinery**
- Machine Work**  
Burt, H. B. & Co., Pittsburgh, Pa.
- Machine Wrenches**  
Billings & Spencer Co., Hartford, Conn.
- Machinists' Scales**  
Starrett, L. S. Co., Athol, Mass.
- Machinists' Tools and Supplies**  
Billings & Spencer Co., Hartford, Conn.  
General Supply Co., 40 John St., N. Y.  
Revston Mfg. Co., Buffalo, N. Y.  
King, J. M. & Co., Waterford, N. Y.
- Manganese Bronze**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Manufacturing Properties**  
Hillman, J. H. & Co., Pittsburgh, Pa.
- Manufacturing Sites**  
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.  
Southern Railway Co., Washington, D. C.
- Measuring Machines**  
Rogers, Jno. M. Box\*, Gauge & Drill Wks., Gloucester City, N. J.
- Meat Choppers**  
Enterprise Mfg. Co. of Pa., Phila., Pa.  
Peck, Stow & Wilcox Co., 27 Murray St., New York.  
Streeter, N. R. & Co., Rochester, N. Y.  
Woodruff, O. D., Pottstown, Pa.
- Metal Brokers**  
American Metal Co., 52 Broadway, N. Y.
- Metals**  
Hendricks Bros., 49 Cliff St., N. Y.  
Hofeler, Theo. & Co., Buffalo, N. Y.  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.  
Rutter, A. T., 256 Broadway, N. Y.  
United Metals Selling Co., 11 Broadway, N. Y.
- Metal Polish**  
Hoffman, Geo. W., Indianapolis, Ind.
- Metal Spinning**  
Goodwin & Kintz Co., Winsted, Conn.
- Milling Machines**  
Adams Co., Dubuque, Iowa.  
Becker-Brinard Milling Machine Co., Hyde Park, Mass.  
Brown & Sharpe Mfg. Co., Providence.  
Carter & Hake Mach. Co., Winsted, Ct.  
Cincinnati Milling Mach. Co., Cin. O.  
Fox Machine Co., Grand Rapids, Mich.  
Garvin Machine Co., Spring and Varick Sts., N. Y.  
Niles Tool Works Co., 138-133 Liberty St., N. Y.  
Shuster, F. B. Co., New Haven, Conn.  
Thurston Mfg. Co., Providence, R. I.
- Mining Knives**  
Bishop, Geo. H. & Co., Cincinnati, O.  
Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mining Machinery**  
Allis, E. P. Co., Milwaukee, Wis.  
Rand Drill Co., 100 Broadway, N. Y.
- Mining Screens**  
Harrington & King Perforating Co., Chicago, Ill.  
Howard & Morse, 45 Fulton St., N. Y.  
Michigan Wire Cloth Co., Detroit, Mich.
- Miter Boxes**  
Thomson Bros. & Co., Lowell, Mass.
- Model Makers**  
Star Mfg. Co., New Haven, Conn.
- Molding Machines**  
Adams Co., Dubuque, Iowa.  
Maywood Fdry. & Mch. Co., Chicago.
- Motor Fans**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Motors, Air**  
Stow Flexible Shaft Co., Phila., Pa.
- Motors, Electric**  
Eddy Electric Mfg. Co., Windsor, Conn.  
General Electric Co., Schenectady, N. Y.  
Starveant, B. F. Co., Boston, Mass.  
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Nail Clippers**  
Cook, H. C. Co., Ansonia, Conn.
- Nail Machinery**  
Crescent Mfg. Co., Belleville, Ill.  
Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail Pullers**  
Bridgeport Mfg. Co., Bridgeport, Conn.  
Hagen & Reid, Troy, N. Y.  
Scranton & Co., The New Haven, Conn.  
Snow, L. T., New Haven, Conn.
- Name Plates, Machinery**  
Livermore, Homer F., Boston, Mass.  
Murdoch & Prior Grate Co., Boston, Mass.
- Natural Gas Pumps**  
Norwalk Iron Wks. Co., So. Norwalk, Ct.
- Nickel Platers' Supplies**  
Eddy Electric Mfg. Co., Windsor, Conn.
- Nickeloid**  
American Nickeloid Co., Peru, Ill.
- Norway Shapes**  
Rowland, William & Harvey, Frankford, Philadelphia.
- Nuts—See Bolts**
- Nuts, Self-Locking**  
National Elastic Nut Co., Milwaukee, Wis.
- Nut Machines**  
Dunham Nut Co., Unionville, Conn.
- Oil Burning Appliances**  
Rockwell, Engineering Co., 26 Cortlandt St., N. Y.
- Oil Extractor**  
Reed & Curtis Mch. Screw Co., Worcester, Mass.
- Oil Heaters—See Oil Stoves.**
- Oil Stones**  
Pike Mfg. Co., Pike Station, N. H.
- Oil Stoves—(See Stoves Oil, Vapor and Gasoline)**
- Oilers**  
Gem Mfg. Co., Pittsburgh, Pa.  
Hammer & Co., Branford, Conn.  
Stoutenburg Mfg. Co., Keithsburg, Ill.  
Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oilless Bearings**  
North American Metalline Co., Long Island City, N. Y.
- Ore Breakers**  
Aultman Co., Canton, O.  
Cresson, Geo. V. Co., Phila., Pa.
- Ores**  
Blair, Reed F. Co., Pittsburgh, Pa.  
Samuel, Frank, Philadelphia, Pa.  
Wister, Francis, Philadelphia, Pa.
- Ox Shoes**  
Scranton Forging Co., Scranton, Pa.  
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.
- Packing**  
Boston Belting Co., Boston, Mass.  
Morrison, Robert, St. Louis, Mo.  
Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.
- Packing, Iron**  
Smooth On Mfg. Co., Jersey City, N. J.
- Paints**  
Dixon, Jos. Crucible Co., Jersey City.
- Pants Stretcher**  
Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors**  
Gospel & Raegener, 290 Broadway, N. Y.  
Hamlin, Geo. R., Washington, D. C.  
Howard & Howson, Philadelphia and Washington.  
Stocking, E. B., Washington, D. C.
- Patterns**  
Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.
- Perforated Metal**  
Clinton Wire Cloth Co., Clinton, Mass.  
Harrington & King Perforating Co., Chicago, Ill.  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Phosphor Bronze**  
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.  
Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tiu**  
Crescent Phosphorized Metal Co., Philadelphia, Pa.  
Haik & Naumann, 518 Pearl St., N. Y.
- Piano Plate Manufacturers**  
Randolph Iron Co., Brooklyn, N. Y.
- Picture Wire**  
Osseman Mills Co., Norwich, Conn.
- Pig Casting Machines**  
Heyl & Patterson, Pittsburgh, Pa.
- Pig Iron**  
Alabama Consolidated Coal & Iron Co., Birmingham, Ala.  
Ashland Steel Co., Ashland, Ky.  
Baird, C. R. & Co., Phila., Pa.  
Cherry Valley Iron Co., Pittsburgh, Pa.  
Dimmick, J. K. & Co., Phila., Pa.  
Hickman, Williams & Co., Chicago, Ill.  
Houston, C. B. & Co., Philadelphia, Pa.  
Nicoll, B. & Co., 38-41 W. 11th St., N. Y.  
Samuel, Frank, Philadelphia, Pa.  
Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.  
Snyder, W. F. & Co., Pittsburgh, Pa.  
Superior Charcoal Iron Co., Grand Rapids, Mich.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Tidewater Steel Co., Phila., Pa.  
Virginia Iron, Coal and Coke Co., Bristol, Va., Tenn.
- Pig Iron Analysis**  
Church, S. R., San Francisco, Cal.
- Pig Iron Storage**  
Am. Pig Iron Storage Warehouse Co., 4 Wall St., N. Y.
- Pig Lead**  
Penna. Smelting Co., Pittsburgh, Pa.
- Pile Drivers**  
Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent**  
National Pipe Bending Co., New Haven, Conn.
- Pipe, National Tube Co., Pittsburgh, Pa.**
- Pipe, Whitlock Coil Pipe Co., Hartford, Ct.**
- Pipe Coupling**  
Williams, J. H. & Co., Brooklyn, N. Y.
- Pipe Cutting and Threading Machines**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Bignall & Keeler Mfg. Co., Edwardsville, Ill.  
Curtis & Curtis, Bridgeport, Conn.  
Jarecki Mfg. Co., Erie, Pa.  
Merrill Mfg. Co., Toledo, O.  
Saunders' Sons, D., Yonkers, N. Y.
- Pipe Grips**  
Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c.**  
Jarecki Mfg. Co., Erie, Pa.  
McNab & Harlin Mfg. Co., N. Y.
- Pipe, Riveted Steel**  
Pollock, W. B. Co., Youngstown, O.  
Scaife, Wm. B. & Sons, Pittsburgh.
- Pipe Unions**  
Dart, E. M. Mfg. Co., Providence, R. I.
- Pipe, Water and Gas**  
Millar, C. & Son Co., Utica, N. Y.  
National Tube Co., Pittsburgh, Pa.  
Red Jacket Mfg. Co., Davenport, Iowa.  
U. S. Cast Iron Pipe & Foundry Co., Phila., Pa.  
Warren City Boiler Works, Warren, O.  
Wood, R. D. & Co., Philadelphia, Pa.
- Piston Rods, Tobin Bronze**  
Ansonia Brass & Copper Co., 99 John St., N. Y.
- Planes**  
Stanley Rule & Level Co., N. Y.
- Planers**  
Amer. Tool Works Co., Cincinnati, O.  
Baird, U. Machinery Co., Pittsburgh, Pa.  
Cincinnati Planer Co., Cincinnati, O.  
Detrick & Harvey Mch. Co., Baltimore.  
Draper Mch. Tool Co., Worcester, Mass.  
Pond Machine Tool Co., Plainfield, N. J.  
Whitcomb Mfg. Co., Worcester, Mass.  
Wilson, W. A., Rochester, N. Y.
- Plated Ware**  
International Silver Co., Meriden, Ct.
- Plates, Iron and Steel**  
Jones & Laughlin, Ltd., Pittsburgh, Pa.  
Lukens Iron & Steel Co., Coatesville, Pa.  
Singer, Nimick & Co., Inc., Pittsburgh, Pa.  
Tidewater Steel Co., Phila., Pa.  
Wood, Alan Co., Philadelphia.
- Plate Iron Work**  
Scaife, Wm. B. & Sons, Pittsburgh.
- Pliers**  
Bridgeport Mfg. Co., Bridgeport, Conn.  
Cronk Hanger Co., Elmira, N. Y.  
Utica Drop Forge & Tool Co., Utica, N. Y.
- Pneumatic Tools**  
Chicago Pneumatic Tool Co., Chicago, Phila. Pneumatic Tool Co., Phila., Pa.
- Pocket Knives**  
Cattaraugus Cutlery Co., Little Valley, N. Y.
- Polishing Wheels**  
Divine Bros. Co., Utica, N. Y.
- Portable Track**  
Atlas Bolt & Screw Co., Cleveland, O.
- Poultry Fencing**  
DeKalb Fence Co., DeKalb, Ill.
- Poultry Nettings**  
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.  
N. J. Wire Cloth Co., Trenton, N. J.  
Tyler, W. S. Co., Cleveland, O.  
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Power Hack Saws**  
Hoefler Mfg. Co., Freeport, Ill.
- Power Hammers**  
Beaudry & Co., Boston, Mass.  
Bradley Co., Syracuse, N. Y.  
Dienelt & Ebenhardt, Philadelphia.  
Dupont Mfg. Co., St. Johnsbury, Vt.  
Kidder, R. E., Worcester, Mass.  
Miner & Peck Mfg. Co., New Haven, Conn.  
Scranton & Co., The, New Haven, Conn.
- Power Transmitting Mach'y**  
Cresson, Geo. V. Co., Phila., Pa.  
Dodge Mfg. Co., Mishawaka, Ind.  
Norwalk Iron Wks. Co., So. Norwalk, Ct.
- Pressed Metal Work**  
Avery Stamping Co., Cleveland, Ohio.
- Presses, Power**  
Adrian Mach. Works, Brooklyn, N. Y.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Cross & Speirs Mch. Co., Waterbury, Ct.  
Ferracute Mach. Co., Bridgeport, N. J.  
Hibbard, W. H., Brooklyn, N. Y.  
Hiles & Jones Co., Wilmington, Del.  
Keagy & Lear Mch. Co., Cohocton, O.  
Lemmer, Chas. & Co., Brooklyn, N. Y.  
Manville, E. J. Mch. Co., Waterbury, Ct.  
Mossberg & Granville Mfg. Co., Providence, R. I.  
Niagara Machine & Tool Wks., Buffalo.  
Perkins Machine Co., Boston, Mass.  
Phila. Machine Works, Philadelphia, Pa.  
Rudolph & Krummel, Chicago, Ill.  
Shuster, F. B. Co., New Haven, Conn.
- Protectiles**  
National Tube Co., Pittsburgh, Pa.
- Pruning Shears**  
Cronk Hanger Co., Elmira, N. Y.
- Pulleys**  
Amer. Pulley Co., Phila., Pa.  
Dodge Mfg. Co., Mishawaka, Ind.  
Eastern Machinery Co., New Haven, Ct.  
Evans, G. F., Boston, Mass.  
Forster Pulley Works, Rochester, N. Y.  
Hess, Snyder & Co., Massillon, O.  
Jones & Laughlin, Ltd., Pittsburgh, Pa.  
Saginaw Mfg. Co., Saginaw, Mich.  
Woods, T. B. Sons, Chambersburg, Pa.
- Pumping Machinery**  
Cook, A. D., Lawrenceburg, Ind.  
Filler & Stowell Co., Milwaukee, Wis.  
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.  
Lake City Engineering Co., Erie, Pa.  
McGowan, J. H. & Co., Cincinnati, O.  
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
- Pumps**  
Athol Pump Co., Athol, Mass.  
Barnes Mfg. Co., Mansfield, O.  
Deming Co., Salem, O.  
Edson Mfg. Co., Boston, Mass.  
Flint & Walling Co., Kendallville, Ind.  
Hess, Snyder & Co., Massillon, O.  
Humphreys Mfg. Co., Massfield, O.  
Myers, F. E. & Bro., Ashland, Ohio.  
Red Jacket Mfg. Co., Davenport, Ia.  
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.  
Wildor, S. & Co., Holliston, Mass.
- Punches, Conductors'**  
Woodman, R. Mfg. & Supply Co., Boston, Mass.
- Punches and Shears, Hand and Power**  
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.  
Bethlehem, Pa.  
Bicknell Hdw. Co., Janesville, Wis.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Hiles & Jones Co., Wilmington, Del.  
Merick, G. S. & Co., New Haven, Conn.  
New Doty Mfg. Co., Janesville, Wis.  
Williams, White & Co., Moline, Ill.
- Punching and Shearing**  
Harrington & King Perforating Co., Chicago, Ill.
- Push Carts**  
Syracuse Chilled Plow Co., Syracuse.
- Pyrometers**  
Gehling, Steinbart & Co., Ltd., Carlstadt, N. J.
- Railways, Industrial**  
Hunt, C. W. Co., West New Brighton, N. Y.
- Rat and Mouse Traps**  
Burditt & Williams, Boston, Mass.
- Ratchet Drills**  
Keystone Mfg. Co., Buffalo, N. Y.
- Rawhide Gears**  
Nazel & Bassett, Philadelphia, Pa.
- Razors**  
Buck Bros., Millbury, Mass.

**Razor Houses**

Pike Mfg. Co., Pike Station, N. H.

**Reamers**

Morris Twist Drill &amp; Mch. Co., New Bedford, Mass.

**Recording Gauges**Bristol Co., Watbury, Conn.  
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.**Reels**

Hendryx, A. B. Co., New Haven, Conn.

**Refrigerating Machinery**

Pike Mfg. Co., York, Pa.

**Refrigerators**

Maine Mfg. Co., Nashua, N. H.

**Registers**

Stowell Mfg. &amp; Foundry Co., So. Milwaukee, Wis.

**Relaying Rails**Donaldson & Newton, Phila., Pa.  
Isaac Joseph Iron Co., Cincinnati, O.  
May & Spalding, 32 Broadway, N. Y.  
Steel & Rail Supply Co., 110 B'way, N. Y.**Reloading Tools**Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Ideal Mfg. Co., New Haven, Conn.**Repairing Sets, Family**Mitchell, W. B., Chicago, Ill.  
Schreyer, M. Sons & Co., Chicago, Ill.  
Star Steel Plate Co., Newark, N. J.**Repair Outfits, Farmers'**

Imperial Bit &amp; Snap Co., Racine, Wis.

**Revolution Counters**Pittkin, A. B. Machinery Co., Providence, R. I.  
Tabor Mfg. Co., Elizabeth, N. J.**Revolvers**Harrington & Richardson Arms Co., Worcester, Mass.  
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.**Rheostats**

Electric Controller &amp; Supply Co., Cleveland, O.

**Rifles**Marlin Fire Arms Co., New Haven, Ct.  
Remington Arms Co., 315 B'way, N. Y.  
Stevens Arms & Tool Co., Chicopee Falls, Mass.**Rins, Rollers**

Shuster, F. B. Co., New Haven, Conn.

**Riveters**

Phila. Pneumatic Tool Co., Phila., Pa.

**Riveters, Pneumatic**

Chicago Pneumatic Tool Co., Chicago.

**Rivets**American Iron & Steel Mfg. Co., Lebanon, Pa.  
American Screw Co., Providence, R. I.  
Blake & Johnson, Waterbury, Conn.  
Burden Iron Co., Troy, N. Y.  
Clark & Cowles, Plainville, Conn.  
Cobb & Drew, Plymouth, Mass.  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Meinnes, C. E. & Co., Phila., Pa.  
Plymouth Mills, Plymouth, Mass.  
Rockford Bolt Works, Rockford, Ill.  
Townsend C. C. & E. P., New Brighton**Riveting Machines**Bethlehem Foundry & Mch. Co., So. Bethlehem, Pa.  
Shuster, F. B. Co., New Haven, Conn.**Roll Mill Machinery**Bradcock Machine & Mfg. Co., Brad-dock, Pa.  
Morgan Construction Co., Worcester, Mass.**Roll Turning Tools**

Fretchey, Sam'l &amp; Co., Ltd., Pittsburgh

**Roller Bearings**Ball Bearing Co., Boston, Mass.  
Mossberg & Granville Mfg. Co., Providence, R. I.**Rolling Mill Machinery**Booth, The Lloyd Co., Youngstown, O.  
Evenson, B. M., Pittsburgh, Pa.  
Farrell Fdry. & Mch. Co., Ansonia, Ct.  
Frank-Kneeland Mach. Co., Pittsburgh.  
Garrison, A. Foundry Co., Pittsburgh.  
Mesta Machine Co., Pittsburgh, Pa.  
Morgan Construction Co., Worcester, Mass.  
Mossberg & Granville Mfg. Co., Providence, R. I.  
Penna. Engineering Wks., New Castle, Penna.  
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.**Rolls, Chilled, Sand and Steel**Booth, The Lloyd Co., Youngstown, O.  
Farrell Fdry. & Mch. Co., Ansonia, Ct.  
Frank-Kneeland Mach. Co., Pittsburgh.  
Garrison, A. Foundry Co., Pittsburgh.  
Mesta Machine Co., Pittsburgh, Pa.  
Morgan Construction Co., Worcester, Mass.**Rolls, Chilled, Sand and Steel**Booth, The Lloyd Co., Youngstown, O.  
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Frank-Kneeland Mach. Co., Pittsburgh.  
Garrison, A. Foundry Co., Pittsburgh.  
Mesta Machine Co., Pittsburgh, Pa.  
Morgan Construction Co., Worcester, Mass.**Rules**Lufkin Rule Co., Saginaw, Mich.  
Stanley Rule & Level Co., 29 Chambers St., N. Y.**Sad Irons**

Williams, A. C., Ravenna, O.

**Sand Blast Apparatus**

Ward, Edgar T. &amp; Sons, Boston, Mass.

**Sand Paper**Baeder, Adamson & Co., Phila., Pa.  
Gramam, Jno. H. & Co., 113 Chambers St., N. Y.**Sash Balances**Caldwell Mfg. Co., Rochester, N. Y.  
Fullman Sash Balance Co., Rochester, N. Y.  
Streeter, N. R. & Co., Rochester, N. Y.**Sash Cords and Chains**Bridgeport Chain Co., Bridgeport, Conn.  
Morton, Thos., 65 Elizabeth St., N. Y.  
Samaoa Cordage Works, Boston, Mass.  
Silver Lake Co., Boston, Mass.  
Smith & Egge Mfg. Co., Bridgeport.**Sash Locks**Fitch, W. & E. T. Co., The, New Haven, Conn.  
Ives, H. B. & Co., New Haven, Conn.  
Oefinger, J. L., Chicago, Ill.**Sash Pullers**Fox Machine Co., Grand Rapids, Mich.  
Grand Rapids Hardware Co., Grand Rapids, Mich.  
Palmer Hardware Mfg. Co., Troy, N. Y.**Sash Weights**Barney & Reed Mfg. Co., Boston, Mass.  
Brown, E. E. & Co., Philadelphia, Pa.**Sausage Stuffers**

National Specialty Mfg. Co., Phila., Pa.

**Saws**Atkins, E. C. & Co., Indianapolis, Ind.  
Bishop, Geo. H. & Co., Cincinnati, Ohio.  
Dialston, Henry & Sons, Inc., Phila., Pa.  
Jones & Hommeru, Chicago, Ill.  
National Saw Co., Newark, N. J.  
Simonds Mfg. Co., Fitchburg, Mass.**Saw Clamps**Dialston, Henry & Sons, Inc., Phila., Pa.  
Gunn & Hannah, Pittsburgh, Pa.**Saw Guides**

Thomson Bros. &amp; Co., Lowell, Mass.

**Saw Handles**

Ladd, W. C., Bristol, Conn.

**Saw Sets**Dialston, Henry & Sons, Inc., Phila., Pa.  
Tailor Mfg. Co., 9 to 15 Murray, N. Y.**Saw Tools**

Atkins, E. C. &amp; Co., Indianapolis, Ind.

**Scales**Chaffillon, John & Sons, 33-39 Cliff, N. Y.  
Chi ago Seal Co., Chicago, Ill.  
Pelouse Scale & Mfg. Co., Chicago, Ill.  
Reading Hardware Co., Reading, Pa.  
Standard Scale Supply Co., Pittsburgh.**Scrap Metals**Armstrong, H. S. & Bro., Atlanta, Ga.  
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.  
Botcher, C., Hoboken, N. J.  
Greiner, F., Philadelphia, Pa.  
Hitter, H. A. & Sons, Phila., Pa.  
Hofele, Theo. & Co., Buffalo, N. Y.  
Leonard, John & Co., 22 Broadway, N. Y.  
Meine, E. O. & Co., Atlanti, S. Ga.  
N. J. Iron & Metal Co., Paterson, N. J.  
Perry, Wm. H. Co., Providence, R. I.  
Phillips, E. H. & Sons Co., Phila., Pa.  
Rogers, W. H., Bridgeport, Conn.  
Samuels, M. Sons, Brooklyn, N. Y.  
Smith Morton B. Co., New York.**Scrap Metal Breakers**

Birdsboro Iron &amp; Steel Breaking Co., Birdsboro, Pa.

**Scrapers, Road**American Steel Scraper Co., Sidney, O.  
Aultman Co., Canton, Ohio.  
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.  
Sidney Steel Scraper Co., Sidney, O.  
Syracuse Chilled Plow Co., Syracuse.**Screens, Perforated Metal**

Harrington &amp; King Perforating Co., Chicago, Ill.

**Screens, Window and Door**

Daroy, Edw. &amp; Sons, Philadelphia, Pa.

**Screw Cutting Dies**Card, S. W. Mfg. Co., Mansfield, Mass.  
Geometric Drill Co., Westville, Conn.  
Rogers, Jno. M. & Sons, Gauge & Drill Wks., Gloucester City, N. J.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.  
Winter Bros., Wrentham, Mass.**Screw Drivers**Brown, R. H. & Co., New Haven, Conn.  
Goodell-Fratt Co., Greenfield, Mass.  
Mayhew, H. H. Co., Shelburne Falls, Mass.  
North Bros. Mfg. Co., Philadelphia, Pa.  
Sawyer Tool Co., Fitchburg, Mass.  
Union Mfg. Co., Buffalo, N. Y.**Screw Machinery**American Tool Wks. Co., Cincinnati, O.  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Draper Mach. Tool Co., Worcester, Mass.  
Garvin Machine Co., Springfield, Vt.  
Jones & Lamson Men. Co., Springfield, Vt.  
Windsor Mch. Co., Windsor, Vt.**Screws**Cochran, H. S. & Sons, 229 West 10th St., N. Y.  
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.  
Machine  
American Screw Co., Providence, R. I.  
Blake & Johnson, Waterbury, Conn.  
Chicago Screw Co., Chicago, Ill.  
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.  
Hubbell, Harvey, Bridgeport, Conn.  
Illinois Screw Co., Chicago, Ill.  
Miles, F. S., 305 Quarry, Philadelphia, Pa.  
Nashua Screw Co., Buffalo, N. Y.  
Phila. Mach. Screw Works, Phila., Pa.  
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Screws, Cold**Reel & Curtis Mch. Screw Co., Worcester, Mass.  
Rhode Island Tool Co., Providence, R. I.**Worcester Mch. Screw Co., Worcester.**Wood  
American Screw Co., Providence, R. I.  
Franklin Moore Co., Winsted, Conn.  
Reading Screw Co., Norristown, Pa.**Screw Saws**Barnes, W. F. & John Co., Rockford, Ill.  
Millers Fall Mfg. Co., 23 Warren St., N. Y.  
Seneca Falls Mfg. Co., Seneca Falls, N. Y.**Seythe Stones and Whetstones**Cleveland Stone Co., Cleveland, O.  
Pike Mfg. Co., Pike Station, N. H.**Seamless Steel Tubes**Lyons, Ellwood, 487 Broadway, N. Y.  
Janney, Steinhilber & Co., Phila., Pa.  
National Tube Co., Pittsburgh, Pa.**Sewing Machines**

National Sewing Machine Co., Belvidere, Ill.

**Shaft Coupling**

Nicholson, W. B. &amp; Co., Wilkes Barre, Pa.

**Shafting**American Steel & Wire Co., Chicago, Ill.  
Crescent, Geo. V. Co., Philadelphia, Pa.  
Dodge Mfg. Co., Mishawaka, Ind.  
Fairmount Mch. Co., Philadelphia, Pa.  
Finished Steel Co., Youngstown, O.  
Jones & Laughlin Co., Pittsburgh, Pa.  
Pardee, J. orks, Perth Amboy, N. J.  
Pittsburgh Steel Shafting Co., Rankin, Pa.  
Stow Mfg. Co., Binghamton, N. Y.  
Woods, T. B. Sons, Chambersburg, Pa.**Shaped Iron and Steel**Allentown Rolling Mill, Allentown, Pa.  
American Steel Hoop Co., Battery Park Building, N. Y.  
Forest City Steel & Iron Co., Cleveland, Ohio.  
Lindsay, W. W. & Co., Phila., Pa.  
Lockhart Iron & Steel Co., Pittsburgh, Pa.**Shapers**Barker-Chard Mach. Tool Co., Cincinnati, O.  
Gould & Eberhardt, Newark, N. J.  
Perkin Machine Co., Boston, Mass.  
Potter & Johnston Co., Pawtucket, R. I.**Shear Knives**Pittsburgh Shear, Knife & Machine Co., Pittsburgh, Pa.  
Trethewey, Sam'l & Co., Ltd., Pittsburgh**Shears and Scissors**Acme Shear Co., Bridgeport, Conn.  
Catawagus Cutlery Co., Little Valley, N. Y.  
Heinrich, R. Sons Co., Newark, N. J.  
Lan. Cutlery Works, Cedar Rapids, Ia.  
National Cutlery Co., Phila., Pa.  
Wibusch & Hilger, Ltd., 9-15 Murray St., N. Y.**Shears, Metal**

Caldin, Thomas Sons Co., Allegheny, Pa.

**Sheet Bars**

National Steel Co., Battery Park Building, N. Y.

**Sheet and Bolt Copper**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Sheet and Rolled Brass**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Sheet Metal Machinery**

Adrian Mach. Works, Brooklyn, N. Y.

**Sheets, Galvanized**American Sheet Metal Co., New York.  
McCullough Iron Co., Wilmington, Del.**Sheets, Iron and Steel**American Sheet Metal Co., New York.  
McCullough Iron Co., Wilmington, Del.  
National Steel Co., Bridgeport, O.  
Republic Iron & Steel Co., Chicago, Ill.  
Singer, Nimick & Co., Inc., Pittsburgh.  
Wister, L. R. & Co., Philadelphia, Pa.  
Alan Wood Co., Philadelphia.**Sheet Zinc**Illinois Zinc Co., Peru, Ill.  
Mathlessen & Hegeler Zinc Co., La Salle, Ill.**Shelf Boxes**Heller Box Co., Montclair, N. J.  
Moore, C. P., Ravenswood, W. Va.**Shelf Ladders**Bicycle Step Ladder Co., Chicago, Ill.  
Coburn Trolley Trac Mfg. Co., Holyoke, Mass.**Shelving**

Warren, J. D. Mfg. Co., Chicago, Ill.

**Shipbuilders**

Newport News Shipbuilding &amp; Dry Dock Co., 1 Broadway, N. Y.

**Shovels, Spades and Scoops**

St. Louis Shovel Co., St. Louis, Mo.

**Sinks**

Kilbourne &amp; Jacobs Mfg. Co., Columbus, O.

**Skates, Ice**Dame, Stoddard & Co., Boston, Mass.  
Union Hardware Co., Torrington, Conn.**Skate Sharpeners**

Osborn Mfg. Co., Cleveland, O.

**Skylights**

Drouve, G. O., Bridgeport, Conn.

**Smelting Works**

Leaves, Paul S., 260 S. Broad, Phila.

**Soapstone Goods**

Pike Mfg. Co., Pike Station, N. H.

**Soapstone Pencils**

Steward, D. M. Mfg. Co., Chattanooga, Tenn.

**Soldering Copper Handles**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Soldering Coppers**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Speaking Tubes**

Anderson, W. R.



Frankford Steel Co., Philadelphia.  
Hobson, Houghton & Co., 28 John St., N. Y.  
Jessop, Wm. & Sons, Sheffield, England, or 91 John St., New York.  
Jones & Laughlin, Ltd., Pittsburgh, Pa.  
Kidd Bros. & Hargner Steel Wire Co., McKees Rocks, Pa.  
La Belle Steel Co., Pittsburgh, Pa.  
Lorain Steel Co., Lorain, Ohio.  
Lukens Iron & Steel Co., Coatesville, Pa.  
Nash, Geo. & Co., Chicago.  
National Steel Co., Battery Park Building, N. Y.  
Newkirk, J. B. & Co., Philadelphia, Pa.  
Otis Steel Co. Ltd., Cleveland, Ohio.  
Republic Iron & Steel Co., Chicago, Ill.  
Rowland, Wm. & Harvey, Frankford, Philadelphia.  
Singer, Nimick & Co., Inc., Pittsburgh.  
Tide-water Steel Co., Phila., Pa.  
Wardlaw, S. & Co., Sheffield, England.  
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.  
*Manufacturers' Agents*  
Ogden & Wallace, 571-583 Greenwich St., New York.  
Snyder, W. F. & Co., Pittsburgh, Pa.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

**Steel, Self Hardening**  
Denman & Davis, 85-87 John St., N. Y.

**Steel Rails**  
Lorain Steel Co., Lorain, Ohio.

**Steel Stamps and Stencil Dies**  
Eucker, L. A. Stamp Wks., Little Ferry, N. J.  
Ness, Geo. M., Jr., 61 Fulton St., N. Y.  
Schwerdt & Siebert, Bridgeport, Conn.

**Steel, Tool**  
Braeburn Steel Co., Braeburn, Pa.  
Crescent Steel Co., Pittsburgh, Pa.  
Denman & Davis, 85-87 John St., N. Y.  
Frankford Steel Co., Philadelphia, Pa.  
Jessop, Wm. & Sons, Sheffield, England, 91 John St., N. Y.  
Jones, B. M. & Co., Boston, Mass.  
La Belle Steel Co., Pittsburgh, Pa.  
Nash, Geo. & Co., Chicago.  
Singer, Nimick & Co., Pittsburgh, Pa.

**Step Ladders, Rolling**  
Bicycle Step Ladder Co., Chicago, Ill.  
Coburn, Trolley Track Mfg. Co., Holyoke, Mass.  
Milbradt, G. A. & Co., St. Louis, Mo.  
Morley Bros., Saginaw, Mich.

**Sticks and Dies**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Card, S. W. Mfg. Co., Mansfield, Mass.  
Curtis & Curtis, Bridgeport, Conn.  
Fairbanks Co., 311 Broadway, N. Y.  
Hollands Mfg. Co., Erie, Pa.  
Jones & Lamson Mfg. Co., Springfield, Vt.  
Jarecki Mfg. Co., Erie, Pa.  
Saunders' Sons, D., Yonkers, N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.  
Winter Bros., Wrentham, Mass.

**Stone Cutting Machinery**  
Gilmour, J. Bennett Bldg., N. Y.

**Stone Working Machinery**  
Patch, F. R. Mfg. Co., Rutland, Vt.

**Stop Screws**  
Read, A. P. & Co., Chicago, Ill.

**Store Fixtures**  
Warren, J. M. Mfg. Co., Chicago, Ill.

**Stone Linings**  
Ostrander Fire Brick Co., Troy, N. Y.

**Stove Pipe Thimbles**  
Cheney, S. & Son, Manlius, N. Y.

**Stoves, Oil, Vapor and Gasoline**  
Schneider & Treunkamp Co., Cleveland, Ohio.

**Straightening Machines, Wire and Sheet Metal**  
Shuster, F. B. Co., New Haven, Conn.

**Structural Iron and Steel Work**  
American Bridge Co., East Berlin, Ct.  
Boston Bridge Works, Boston, Mass.  
Eastern Bridge & Structural Co., Worcester, Mass.  
Forest City Steel & Iron Co., Cleveland, Ohio.  
Illinois Steel Co., Chicago, Ill.  
Mooney Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.  
New England Structural Co., Boston, Mass.  
Phoenix Iron Co., Philadelphia, Pa.  
Ritter-Conley Mfg. Co., Pittsburgh, Pa.  
Stewart Iron Works, Cincinnati, Ohio.  
West Side Foundry Co., Troy, N. Y.

**Sulphuric Acid**  
Matthiessen & Soller Zinc Co., La Salle, Ill.

**Swaging Machines**  
Excelor Needle Co., Torrington, Ct.

**Table Ware**  
International Silver Co., Meriden, Ct.

**Tacks, Brads, &c.**  
Diamond Tack & Nail Works, Raynham, Mass.  
Grand Crossing Tack Co., Grand Crossing, Ill.  
Milwaukee Tack Co., Milwaukee, Wis.  
Plymouth Mills, Plymouth, Mass.  
Ripley & Bartlett, Plymouth, Mass.  
Shelton Co., Birmingham, Conn.

**Tack and Nail Machinery**  
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

**Tanks, Iron and Steel**  
Manogue-Pagson Iron Co., Memphis, Tenn.  
Scalfie, Wm. R. & Sons, Pittsburgh, Pa.

**Tapes**  
Larkin Rule Co., Saginaw, Mich.

**Tap Holder**  
Ideal Machine Works, Hartford, Conn.

**Tapping Machines**  
Hosbell, Harvey, Bridgeport, Conn.

**Taps and Dies**  
Besley, C. H. & Co., Chicago, Ill.

Butterfield & Co., Derby Line, Vt.  
Card, S. W. Mfg. Co., Mansfield, Mass.  
Reeco, E. F. Co., Greenfield, Mass.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.  
Winter Bros., Wrentham, Mass.

**Telephones**  
Mianus Electric Co., Mianus, Conn.  
Rawson Electric Co., Elvira, Ohio.

**Terne Plate**  
American Tin Plate Co., N. Y.

**Thimble Skeins**  
Mitchell, W. B., Chicago, Ill.

**Time Recorders**  
Chicago Time Register Co., Chicago, Ill.  
Nanz, C. & Co., 127 Duane St., N. Y.  
Simplex Time Recorder Co., Gardner, Mass.  
Wagoner Watchman Clock Co., Grand Rapids, Mich.

**Tin Mills**  
Philadelphia Roll & Mch. Co., Phila., Pa.  
Phillips, F. R. & Sons Co., Phila., Pa.

**Timers' Tools and Machines**  
Niagara Machine & Tool Works, Buffalo, N. Y.

**Tin Plate**  
American Tin Plate Co., N. Y.  
Champion Iron & Steel Co., Muskegon, Mich.  
Merchant & Co., Inc., Philadelphia, Pa.

**Tin Plate Machinery**  
Lloyd Booth Co., Youngstown, Ohio.

**Tinware**  
Keen & Hagerty, Baltimore, Md.

**Timware Machinery**  
Shuster, F. B. Co., New Haven, Conn.

**Tobin Bronze**  
Ansonia Brass & Copper Co., 99 John St., N. Y.

**Toe Calks, Steel**  
Burke, P. F., Boston, Mass.

**Toe Clips**  
Snow, L. T., New Haven, Conn.

**Tool Chests**  
Am. Tool Chest Co., 200 W. Houston St., New York.  
Bliss, R. Mfg. Co., Pawtucket, R. I.

**Tool Grinders**  
Seiders, Wm. & Co., Inc., Phila., Pa.  
Union Mfg. Co., Buffalo, N. Y.

**Tools**  
Athol Machine Co., Athol, Mass.  
Brumfield-Hueller Co., Elizabeth, N. J.  
Brown, R. H. & Co., New Haven, Conn.  
Goodell Pratt Co., Greenfield, Mass.  
Mayhew, H. H. Co., Shelburne Falls, Mass.  
Millers Falls Co., 28 Warren St., N. Y.  
Springfield Machine Screw Co., Springfield, Mass.  
Stank, Rule & Level Co., 29 Chambers St., New York.  
Starrett, L. S. Co., Athol, Mass.  
Stevens, J., Arms & Tool Co., Chicopee, Mass.

**Tools, Blacksmith and Wheelwright**  
Champion Blower & Forge Co., Lancaster, Pa.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

**Tools, Steam and Gas Fitters'**  
Saunders' Sons, D., Yonkers, N. Y.

**Torches, Oil and Gasoline**  
Schneider & Treunkamp Co., Cleveland, O.

**Tote Boxes**  
Clark, W. J. & Co., Salem, O.

**Toys, Iron**  
Coleman Hardware Co., Chicago, Ill.

**Transom Openers**  
Ormsby, E. A., Melrose, Mass.

**Tree Guard**  
Hartman Mfg. Co., 309 Broadway, N. Y.  
Up-to-date Mfg. Co., Terre Haute, Ind.

**Trolleys**  
Box, Alfred & Co., Philadelphia, Pa.

**Trowels**  
Bishop, Geo. H. & Co., Cincinnati, O.  
National Saw Co., Newark, N. J.

**Trucks**  
Boston & Lockport Block Co., Lockport, Fairbanks Co., 311 Broadway, N. Y.  
Kilbourne & Jacobs Mfg. Co., Columbus, Lansing Wheelbarrow Co., Lansing, Mich.  
Syracuse Chilled Plow Co., Syracuse, N. Y.

**Tub Hoops**  
Utman Bros., Medina, Ohio.

**Tube Expanders**  
Henderer, A. L. Sons, Wilmington, Del.

**Tubes, Seamless Drawn Copper, Brass and Bronze**  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Randolph-Crowes Co., Waterbury, Conn.

**Tubing, Brass**  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Irvine, Ellwood, 487 Broadway, N. Y.  
Phoenix Tube Co., Brooklyn, N. Y.  
Spofford, W. S. & Son, Providence, R. I.

**Tubing, Iron**  
Phoenix Tube Co., Brooklyn, N. Y.

**Tubing, Seamless**  
Irvine Ellwood, 487 Broadway, N. Y.

**Tubing, Steel**  
Harris, Sam'l & Co., Chicago, Ill.  
Best Transmission Co., Danbury, Ct.  
Irvine, Ellwood, 487 Broadway, N. Y.  
Janney, Steinmetz & Co., Phila., Pa.  
Lene's John S. Son & Co., 4 Fletcher St., N. Y.  
McInnes, C. E. & Co., Phila., Pa.  
National Tube Co., Pittsburgh, Pa.  
Shelby Steel Tube Co., Cleveland, O.  
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

**Tumbling Barrels**  
Henderson Bros., Waterbury, Conn.  
Northern Engineering Works, Detroit, Mich.

**Tungsten Metal**  
Wolfgram Works, Roswell, Saxony.

**Turnbuckles**  
Cleveland City Forge & Iron Co., Cleveland, O.  
McNeill Bros., 465 Kent Ave., B'klyn.

**Twist Drills**  
Cleveland Twist Drill Co., Cleveland, Graham, John H. & Co., 118 Chambers St., N. Y.  
Morse Twist Drill & Machine Co., New Bedford, Mass.

New Process Twist Drill Co., Taunton, Mass.  
Slocumb, J. T. & Co., Providence, R. I.  
Standard Tool Co., Cleveland, O.

**Twist Drill Grinders**  
Reid, L. S. & Son, Barre, Mass.  
Washburn Shops of Worcester Polytechnic Inst., Worcester, Mass.  
Wilmarch & Morman, Grand Rapids, Mich.

**Upholsterers' Hardware**  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

**Valves, Gas, Water and Steam**  
Ashton Valve Co., Boston, Mass.  
Chapman Valve Mfg. Co., Boston.  
Crosby Steam Gate & Valve Co., Boston.  
Jenkins Bros., 71 John, N. Y.  
Kennedy Valve Mfg. Co., 73 John St., N. Y.  
Mason & Harlin Mfg. Co., 56 John, N. Y.  
Mason Regulator Co., Boston, Mass.  
Wood, R. D. & Co., Philadelphia, Pa.

**Varnish**  
Standard Varnish Works, 29 Broadway, N. Y.

**Vegetable Slicers**  
Streeter, N. R. & Co., Rochester, N. Y.

**Ventilating Fans**  
American Blower Co., Detroit, Mich.  
Bayley, Wm. & Sons Co., Milwaukee, Wis.  
Boston Blower Co., Hyde Park, Mass.  
Buffalo Forge Co., Buffalo, N. Y.  
Exeter Machine Wks., Boston, Mass.  
Perkins, B. F. & Son, Holyoke, Mass.

**Ventilating System**  
Ormsby, C. A., Melrose, Mass.  
Ford, Ill.

**Ventilator Appliances**  
Howard & Morse, 45 Fulton St., N. Y.

**Ventilators**  
Drouve G. Co., Bridgeport, Conn.  
Merchant & Co., Inc., Philadelphia, Pa.  
National Pancoast Ventilator Co., Phila., Pa.

**Ventilator Openers**  
Ormsby, E. A., Melrose, Mass.

**Vises**  
Athol Machine Co., Athol, Mass.  
Bignall & Keeler Mfg. Co., Edwardsville, Ill.  
Hollands Mfg. Co., Erie, Pa.  
Howard Iron Works, Buffalo, N. Y.  
Lewis Tool Co., 44 Barclay St., N. Y.  
Parker, Chas. Co., Meriden, Conn.  
Prentiss Vise Co., 44 Barclay St., N. Y.  
Utica Drop Forge & Tool Co., Utica, N. Y.

**Wagon Jacks**  
Covert Mfg. Co., West Troy, N. Y.  
Covert's Saddlery Works, Farmer, N. Y.  
Lane Bros. Co., Poughkeepsie, N. Y.

**Washers**  
Hall's, Sam'l Sons, 229 West 10th St., N. Y.  
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.  
Nut & Washer Mfg. Co., Milwaukee, Wis.  
Wilson & Smith, Worcester, Mass.

**Washers, Lead**  
Milton Mfg. Co., Milton, Pa.

**Washing Machines**  
Brammer, H. F. Mfg. Co., Davenport, Ia.  
Clark, Quilen & Morse, Peoria, Ill.  
Richmond Cedar Works, Richmond, Va.  
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

**Watchman's Clocks**  
Nanz, C. & Co., 127 Duane St., N. Y.  
Wagoner Watchman Clock Co., Grand Rapids, Mich.

**Water Gates**  
Kennedy Valve Mfg. Co., 73 John St., N. Y.

**Water Wheels**  
Poole, Robt. & Son Co., Baltimore, Md.

**Well Supplies**  
Cook, A. D., Lawrenceburg, Ind.

**Wheelbarrows**  
American Steel Scraper Co., Sidney, O.  
Kilbourne & Jacobs Mfg. Co., Columbus, Lansing Wheelbarrow Co., Lansing, Mich.  
Syracuse Chilled Plow Co., Syracuse, N. Y.

**Wind Mills**  
Flint & Walling Co., Kendallville, Ind.

**Window Cord**  
Samson Cordage Works, Boston, Mass.

**Window Fasteners**  
Stanley Works, New Britain, Conn.

**Window Weights**  
Harney & Reed Mfg. Co., Boston, Mass.

**Wire**  
Dillon-Griswold Wire Co., Sterling, Ill.  
Grand Crossing Tack Co., Grand Crossing, Ill.  
Kidd Bros. & Hargner Steel Wire Co., McKees Rocks, Pa.  
Miller & Van Winkle, Brooklyn, N. Y.  
National Wire Co., New Haven, Ct.  
New Haven Wire Mfg. Co., New Haven, Conn.  
Prentiss, Geo. W. & Co., Holyoke, Mass.  
Reading Screw Co., Norristown, Pa.  
Spencer Wire Co., Worcester, Mass.  
Stewart Wire Co., Easton, Pa.  
Summit Wire Co., Cuyahoga Falls, O.  
Townsend, C. C. & E. P., New Brighton, N. Y.  
Trenton Iron Co., Trenton, N. J.  
Warner Br. & Co., Bridgeport, Conn.  
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

**Wire Chains**  
Bridgeport Chain Co., Bridgeport, Ct.  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Onida Community, Ltd., Niagara Falls, N. Y.

**Wire Cloth**  
Barnum, E. T., Detroit, Mich.  
Clinton & Brecht Co., Clinton, Mass.  
Derby, Edward & Sons, Philadelphia.  
Ester Wire Works Co., 65 Fulton St., New York.  
Gilbert & Bennett Mfg. Co., 43 Cliff St., New York.  
Howard & Morse, 45 Fulton St., N. Y.  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., New York.  
Ludlow Saylor Wire Co., St. Louis, Mo.  
Michigan Wire Cloth Co., Detroit, Mich.  
New Freedom Wire Cloth Co., New Freedom, Pa.  
N. J. Wire Cloth Co., Trenton, N. J.  
Scheeler's Sons, Buffalo, N. Y.  
Tyler, W. S. Co., Cleveland, O.  
Wickwire Bros., Cortlandt, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

**Wire Cutters**  
Chandler & Farquhar, Boston, Mass.  
King, J. M. & Co., Watertown, N. Y.  
Utica Drop Forge & Tool Co., Utica, N. Y.

**Wire Dies**  
McFarland, Wm., Trenton, N. J.

**Wire Drawing Machinery**  
Morgan Construction Co., Worcester, Mass.  
Moser & Granville Mfg. Co., Providence, R. I.

**Wire Fences—(See Fencing, Iron and Wire.)**

**Wire Goods**  
Brooks, M. S. & Sons, Chester, Conn.  
Darby, Edward & Sons, Philadelphia.  
Gilbert & Bennett Mfg. Co., 43 Cliff St., New York.  
Jenckes, E. Mfg. Co., Pawtucket, R. I.  
Michigan Wire Cloth Co., Detroit, Mich.  
Scheeler's Sons, Buffalo, N. Y.  
Wickwire Bros., Cortlandt, N. Y.  
Wire Goods Co., Worcester, Mass.

**Wire Forming Machinery**  
Automatic Machine Co., Bridgeport, Ct.  
Manville, E. J. Mch. Co., Waterbury, Ct.  
Nelson, A. H. Mch. Co., Bridgeport, Ct.  
Rudolph & Krummel, Chicago, Ill.  
Shuster, F. B. Co., New Haven, Conn.

**Wire Mill Machinery**  
Braddock Mch. & Mfg. Co., Braddock, Pa.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

**Wire Mats**  
Hartman Mfg. Co., 309 Broadway, N. Y.

**Wire Nails**  
American Screw Co., Providence, R. I.  
Dillon-Griswold Wire Co., Sterling, Ill.  
Grand Crossing Tack Co., Grand Crossing, Ill.  
National Wire Co., New Haven, Ct.  
Summit Wire Co., Cuyahoga Falls, O.  
Townsend, C. C. & E. P., New Brighton, N. Y.

**Wire Nail Machinery**  
Braddock Mch. & Mfg. Co., Braddock, Pa.  
Miller, H. J., Bridgewater, Mass.  
National Machinery Co., Tiffin, Ohio.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

**Wire Pats**  
Jenkinson, R. C. & Co., Newark, N. J.

**Wire Reels Adjustable**  
Shuster, F. B. Co., New Haven, Conn.

**Wire Rods, Steel**  
Ashland Steel Co., Ashland, Ky.  
Consolidated Iron & Steel Co., Bristol, Pa.  
National Wire Co., New Haven, Conn.  
Nicol, J. & Co., 36-61 Wall St., N. Y.  
Prentiss, Geo. W. & Co., Holyoke, Mass.  
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

**Wire Rope, Iron and Steel**  
American Steel & Wire Co., Chicago, Ill.  
Broderick & Bascom Rope Co., St. Louis, California Wire Works, San Francisco.  
Hazard Mfg. Co., Wilkes-Barre, Pa.  
A. Leschen & Sons Rope Co., St. Louis.  
Trenton Iron Co., Trenton, N. J.  
Wat-rbury Rope Co., 69 South St., N. Y.  
Williamsport Wire Rope Co., Williamsport, Pa.

**Wire Straightening and Cutting Machinery**  
Shuster, F. B. Co., New Haven, Conn.

**Wire Stretchers**  
Arcade Mfg. Co., Freeport, Ill.

**Wood Hardware**  
Bliss, R. Mfg. Co., Pawtucket, R. I.

**Wood Screw Machinery**  
Cook, Asa S. & Co., Hartford, Conn.

**Wood Trimmers**  
Fox Machine Co., Grand Rapids, Mich.

**Wood Working Machinery**  
Defiance Mch. Works, Defiance, O.  
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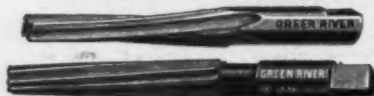
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